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PRIEST

ACCOMODATING PEAK BAGGERS

ON

MOUNT ELBERT

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Field Project

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and

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Title: Accommodating Peak Baggers on Mount Elbert

Keywords: Mountain climbing, Mountaineering, Trail facilities, Fourteeners.

Abstract: Mount Elbert is one of the primary goals of a group of a fairly new type of recreation called "peak bagging". The sport of peak bagging involves people who climb high mountains mostly to challenge themselves. The needs of peak baggers are somewhat different than those of either hikers or mountaineers. Past and current management was explored to find the source of problems related to trail degradation and user dissatisfaction on Mount Elbert.

When a trail was not seen as adequate to climbers they built another one virtually by their sheer numbers scrambling up and down the mountain. This trail was not designed and now because of the amount of use it has received and its poor location it now presents the user with a mess of braided trails. In some places the trail has grown so wide that whole ridge lines have been consumed. Otner problems that are affecting user satisfaction are the lack of toilets, maintained registers and inadequate trail heads.

By understanding the needs of the peak bagger it is now possible to plan for this use by properly designing trails, and associated facilities such as trailheads, backcountry toilets, signs and registers. Managers of other popular mountains were interviewed to learn what techniques are being used and the amount of use they are experiencing.

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Summary The sport of peak bagging, climbing high mountains in order to challenge oneself, has grown rapidly in popularity over the last 20 years. By not predicting and monitoring this increased use, several mistakes in management have been made and perpetuated, increasing the resulting problems.

One well-designed trail was closed in hopes of discouraging hikers and motorcycles. On another trail hikers were allowed and then encouraged to use a route that was not designed for trail use. Feedback in the form of trail register comments was never given the attention it deserved. Recreation staff relied on trail inventories taken by seasonal workers who did not understand or convey to their supervisors the seriousness of the trail design problems. All this led to a situation in which users have been allowed to negatively affect their own experience. Trails quickly grew so wide and eroded that maintenance has been difficult or impossible.

With this study, there is now the chance not only to alleviate these problems but also to reach beyond simple custodial management and begin to proactively serve the public. Peak baggers are somewhat different in their needs compared to backpackers and mountaineers. They use the climbing of the mountain as a way to challenge and help identify themselves. They are less concerned about observing flora and fauna, solitude, or experiencing nature then they are about the number of peaks climbed, recognition of that effort and their equipment, clothes, and physical condition.

The peak bagger is generally a white, well-educated, middle- to upper-class person who likes to climb one or two peaks in a day,and keep count of these numbers. This can be part of an extended vacation but is more likely the reason for a day trip. This type of user wants to feel a sense of

adventure and challenge but primarily the accomplishment is getting to the top and back quickly and safely. Peak baggers would like to see well maintained trails, signs indicating directions and distance, and registers in which they can record their names and accomplishment for others to see.

Mount Elbert's North Trail should be closed and rehabilitated. The South and Black Cloud Trails should be upgraded with proper switchbacks and trailheads. These trails should be well designated. Maps and trail brochures should be available to help highlight these trails.

Forest Service management of Mount Elbert also has an effect on the adjacent Wilderness Areas. By making Mount Elbert more attractive, it may be possible to concentrate intense use here rather than on the high peaks in more restrictive Wilderness Areas.

To further enhance the experience for peak baggers, a more easily accessible peak register could be maintained, and successful climbers could be rewarded with a certificate of accomplishment. Primitive solar-powered toilets would help stop the accumulation of toilet paper "flowers" near the trail especially above timberline.

Districts with high mountain peaks should begin now to make sure that the trails and facilities are adequate for current and expected use. Plans should be outlined now to accommodate the ever-increasing use of high mountain peaks for the sport of peak bagging. The penalties to both mountain management and users are too great when this use is ignored, even for a short time.

CHAPTER 1

STATEMENT OF PROBLEM

The sport of peak bagging or climbing high peaks to challenge oneself has grown so popular that its impacts have gone beyond famous mountains like Mount Whitney. Now many mountains are considered baggable. By understanding the needs of these new users, it will be possible to plan and properly design trails and associated facilities such as trailheads, backcountry toilets, signs and registers.

In the past, mistakes were made in trying to deal with this new type of recreation called peak bagging. Facilities in place are not adequate for the amount of this type of use. Several management alternatives are available to accommodate these recreationists. One key step in the selection of these alternatives is to explore and understand the needs of these users.

An extensive search of the literature was also conducted, using the Forest Service INFO computer-based data table and the Clemson University library. The findings of many researchers in areas of trail management, user satisfaction, and the psychology and sociology of mountaineering were examined.

In addition, interviews with managers of other mountains that attract peak baggers were undertaken, to uncover examples of management methods that have worked and others that appear to represent the state-of-the-art techniques. Comparisons of the amount of use and trends in the 1980's are also useful in predicting future use on Mount Elbert.

A look at past management reveals that decisions made in the early 1970's have had a large influence on the problems that are currently being faced. Management direction as outlined in the Forest Land Management Plan is presented to show current management.

Using trail and peak registers, the amount of use and trends in use are discussed. Data from trail counters are compared with those for the trail registers to show the compliance rate. The comments of hikers taken from the registers are then compiled for subject areas and analyzed.

With this information in mind, several alternatives in management are presented. The advantages and disadvantages of each are presented and the alternatives are ranked on the basis of need and estimated cost. A timetable has been drawn up so that the schedule may be undertaken in an orderly manner. A discussion of possible monitoring and evaluation techniques concludes the study.

In summary the objectives of this project are to analyze past and current management along with patterns of use and needs of the user to identify the best possible strategy for the future.

CHAPTER 2

INTRODUCTION

Mount Elbert's summit is a point of rock and tundra 14,433 ft above sea level. This fact places Elbert first among a long list of high peaks in Colorado, a state known for its mountains. Elbert's height also places it high on lists of a particular kind of recreationist, the "peak baggers." Following the guidebooks and footprints of earlier mountaineers, they have begun to develop their own trails, trails developed not from planning but because they lay on the most direct path from the starting point to the summit. This did not cause problems immediately, but now the steeper sections of trail have grown in width, consuming whole ridge lines with braided trails that now form huge open scars. Other signs of unplanned use are also starting to appear from the congested trailheads to the blossoming of toilet paper "flowers" just out of sight of the trail.

The focus of this study might well have applied to mountains in general. But Elbert and mountains like it have acquired a special status in our minds simply because they have been surveyed and found to be higher than other mountains. As Mitchell aptly said in his book, Mountain Experience (1983):

> For those who will climb there is this reminder. While looking for happiness and fulfillment, some of us find mountains. If, in climbing them, we feel and become more than was possible before, let us not forget whom to praise. It is not the stones that make us happy. They provide no memories or sense of completion. Whatever we find in the mountains we took there in the first place. In the end the mountains do not care what experience we make of them. They are nothing but wrinkles on a shifting crust, frozen water upon water, dust upon dust--nothing--until men and women come and give them meaning. (p.225)

So it is the people who have come and are still to come to this mountain that I will also be exploring. People come to climb Elbert for many different reasons. Some compete against themselves, the clock, or fellow climbers. Some have climbed Elbert many times, often in every season of the year. And there are also those who climb Elbert with extreme difficulty, for a once-in-a-lifetime experience. Once it is understood why climbing this mountain is important, then intelligent decisions can be made concerning its function as a recreational resource.

As technology advances and peoples' interests change, so do the forms of recreation they pursue. In the past, the Forest Service has met these challenges with varying degrees of success. Downhill skiing, snowmobiling, white water sports, and mountain biking are all fairly new forms of recreation occurring in the nation's Forests. Mountain climbing is not new. We have been thrilled by the exploits of famous mountaineers for many years. Those rugged individuals, complete with bulging packs of specialized equipment, only represented a minority of users in a highly publicized sport. Now, with the help of lighter, widely available hiking gear, many can now emulate, even if on a smaller scale, the challenges and rewards of mountaineering.

Some may perceive the environmental impacts alone as reason enough to change the management of the area. These impacts are not significant in an ecologic sense. They do have an impact on the experience of the user. The experience is the product that is important. If the needs of the users who have produced these results are not clearly understood, the improvements provided may never be used properly.

Background

Mount Elbert is located in central Colorado near the town of Leadville. Not only is Elbert the tallest summit in Colorado, it is second only to California's Mount Whitney in the continental U.S.. Major population centers on the Front Range, such as Denver and Colorado Springs are within a two-hour drive of the area. In fact, more than three million people live in this general area.

A jeep made it to the top in 1949 as part of a larger caravan sent to promote the construction of a road to the top plus a ski area. Since then, bikes, all-terrain vehicles (ATV's) and helicopters have all made it to the top.

Even though Mount Elbert is the highest mountain in the state, it is one of the easiest to climb. There are three major routes: the North Trail is the shortest, at 4.5 miles; the South Trail is slightly longer, at 5 to 6 miles; and the Black Cloud Trail is the longest at 5.5 miles. The North and South Trails accommodate the majority of users.

Although some hikers camp part way up, most people can make the hike in a short day trip. For those in good condition it is little more than a 4 hour round trip. There are, of course, the usual dangers. Late afternoon lightning, hypothermia, and altitude sickness are especially likely on Mount Elbert. There is also a lesser danger of becoming lost or injured from falling, dangers that are even more significant for the very old, young, or unacclimated hiker.

DEFINITIONS

PEAK BAGGERS - peak baggers are neither exactly hikers nor technical climbers. They are people who obtain satisfaction by the challenge of climbing a high peak. Peak bagging involves complex sociology and psychology that is concerned more about self, group and achievement than about solitude and enjoyment of nature.

FOURTEENERS - peaks over 14,000 feet in elevation. Similar to the collection of peaks over 4,900 feet in elevation in New York called Forty--niners.

FRISSELL CODE - a system of inventory for backcountry campsites based on impacts.

LIMITATIONS

Time limitations required that this project be completed during the winter which made field observations impossible. Therefore no attempt was made to present actual amounts or locations. Without this on--the--ground inspection it would be premature to give cost estimates of the action items recommended.

CHAPTER 3

LITERATURE REVIEW

Since the literature review was so important to the development of this project several sources are given a detailed explanation here. There are two categories of references, those dealing with the environment and those that explore the user.

GUIDEBOOKS

Little has been written about climbing Mount Elbert. There are several guidebooks such as those by Walter Borneman and Lyndon Lampert (1984), that list climbs on Elbert. These and other guidebooks generally cover only the routes, times, landmarks, and who first climbed certain routes. There is little or no discussion about the experience such as wildlife, flowers, or views that can be found on these peaks. Guidebooks usually contain a chapter on hiking ethics that appear to be a creed, since most readers are probably well aware of these rules. One glaring irony to these rules of the trail is the often found reference to "bushwhacking", the practice of following a ridge rather than following a trail. This practice is a throwback to the old days of mountaineering when a trail may not have been present.

The titles of other guidebooks gives some insight into the trend and direction of "peak bagging." Two books published by Cordillera Press are very similar. Garratt and Martin wrote Colorado's High Thirteeners: A Climbing and Hiking Guide (1984), which is a matrix of trips that shows a ranking from easy hiking to difficult climbing with the time it takes to climb each peak. Borneman's, Colorado's Other Mountains: A Climbing Guide to Selected Peaks Under 14,000 Feet (1984) contains the author's lament "An earlier thought-to include only Thirteeners-was discarded for fear of repeating the Fourteener craze (for which I accept my share of the blame!)."

Many authors seem unable to explain why they are advertising a mountain that they do not want to see overrun with people. The same author cited above (Borneman, 1988)

> Unfortunately, the relatively virgin territory surrounding Wham Ridge may be in danger of being overrun because of Vestal, Arrow and Middle Trinity's dubious distinction of being among Colorado's 100 highest peaks. The difficulties of access and ascent

may insulate these peaks somewhat from the hordes who, having beaten paths up and down Colorado's Fourteeners, are turning to other goals.

Owens (1986) outlined Mount Elberts statistics as the highest point in the Rocky Mountains and second highest in the continental United States. He gave no details of the flora and fauna and even slighted its appearance by saying that it and the other high peaks in the Sawatch Range are noted more for their height than for any outstanding shapeliness or ruggedness.

Another author Falk, (1987) gave directions to 4 of the 68 14,000 foot high mountains in the contiguous 48 states. "This situation of 4 close by peaks gives the Palisade Crest a 'magnet-like appeal'" he wrote.

There are a few accounts about famous climbers who have climbed Elbert. Jenkins' article in Summit Magazine (1987), is about Bob Ormes, author of the well known Guide to Colorado Mountains. Ormes ascents include all 54 of Colorado's fourteeners and particularly Pikes Peak which he has climbed more than forty times.

Rosenbrough, in an other article in Summit magazine (1988), on well known mountaineers recall their initial climbs included the stories of how many famous mountaineers began their careers in Colorado.

Boyer wrote an article in Summit magazine (1978), on "Colorado's 14,000-Foot Peaks . . . 147,000 Feet Elevation Gain in 21 days!" and detailed climbing all of Colorado's Fourteeners as fast as he could. He justified the feat as a medical study, and listed five factors necessary for an endurance climb: (1) lots of mileage beforehand; (2) practice one third of the goal mileage; 3) lightweight flexible soled boots; (4) lots of peanut butter sandwiches; and (5) a touch of insanity.

TRAIL MANAGEMENT

More (1980) stated that trail use cannot be judged by the width of the trail. He found that trail width is influenced more by slope, because hikers wander across a trail in search of good footing or to slow down. More wrote that a well-located trail receiving heavy use may actually show less wear than a poorly located trail receiving light use. An obvious question is what would be expected from a trail that is poorly located and receives heavy use--such as those on Elbert.

Cole (1983) has looked at ways to monitor and assess trail conditions; he believes that increased use does increase trail width significantly. Although he agreed with More that "Most problems can be triggered by low levels of use on a poorly located or poorly maintained trail," More

found that incision problems occurred on trail segments that had slopes of more than 20 percent.

Monitoring can make use of the census method, which amounts to learning from past mistakes. These surveys should be taken by personnel trained in ecology and soil science with a background in trail maintenance and construction. This is an effective way to monitor past trail management and ensure that future trail construction is developed to avoid potential problems.

Cole concluded that trail deterioration seldom causes significant ecologic damage, and thus the significance of trail deterioration problems should be determined primarily by their effect on the visitors' experience.

Matheny (1978) has outlined some novel approaches to managing switchbacks. Keeping hikers from shortcutting across switchbacks is a constant problem. She found that paving the trail and signing are not effective measures. Personnel contacts are by far the most effective means to deter shortcutting, but this cost is prohibitive.

Improved signing has helped. It has to be eye-catching, i.e., using a snake to attract attention or setting up a string of signs like the old Burma Shave road signs. Another interesting approach has been to construct a legal shortcut on which kids can test out their skills and energy.

Psychology and Sociology

More literature was found regarding the psychology and sociology of recreation, much of which was derived from the Clemson Short Course. Hunt, in the Journal of Environmental Education (1973) on "Natural Resource Use and the Hierarchy of Needs," listed Maslow's five human needs: physiological, safety, social, esteem, and self-actualization, and then compared Driver and Tocher's lists of motives of recreation which are: escape, restoring, adaptive energies, sharing with friends, social, identity, collecting status symbols, developing skills, and exploring and creating.

These latter motivational forces seem to relate strongly to Maslow's higher-needs of social, esteem and self-actualization. Hunt concluded that until Americans believe their lower needs of food and shelter are in danger, they will continue to be more concerned with how land managers deal with recreation rather than with resources such as timber and grazing.

Stankey a research social scientist with the Forest Service outlined seven concepts that can be used to better understand the values of recreation that are not easily defined in economic terms. In a manuscript (Stankey, 1974) titled "A Sociologist Among the Economists; Some Social Concepts for Outdoor Recreation Planning," Stankey listed the Recreation Opportunity Spectrum, which gives planners a

tool to offer a dynamic balance across an entire continuum of possibilities. Opportunities should not be viewed as "either/or" or even "how much," but rather as a package that permits people to choose alternatives that best meet their needs.

The concept of recreational preference is linked to "opportunity theory," which says that participation depends on availability. Looking at demand in this way has several potential flaws. Users may actually be seeking other types of opportunity that are unavailable or simply not known to the user. There is also not an automatic coalition between use and satisfaction. Social scientist have long sought to understand the differences between the results of surveys and actual behavior. So we must understand preferences in order to recognize gaps in opportunities currently provided.

The concept of substitutability is important because different settings may be able to provide the same kinds of experiences. Hendee, Gale, and Catton proposed five categories of activities according to the motives they fulfilled. Of these, three seem to fall into the activity preference types for peak baggers.

> Appreciative-symbolic: focus on appreciation of environmental qualities and preservation
> Extractive-symbolic: focus on the extraction of "trophies" from the environment
> Active-expressive: focus on the activity rather than the setting in which it occurs

At one time mountain climbing may have been largely an Appreciative-symbolic activity, but with the emphasis on numbers of peaks climbed and how quickly, there seems to be a shift to the Extractive-symbolic and Active-expressive preferences. Thus other substitutes may appeal to the peak baggers.

The concept of carrying capacity is not a value determined solely by physical-biologic conditions. It is responsive to management; the planner must determine the "limits of acceptable change" based on the management objectives for an area. Change in itself is not bad unless it conflicts with those objectives. The capacity of a site could also be expanded by intensive management rather than by trying t add to the resource in some manner.

The concept of dependent satisfactions defines recreation resources as a range from the common to the scarce. Those activities that rely on scarce and unique settings should be reserved, and conflicts should be settled in favor of the dependent activity.

The concept of externalities re tes that often the benefits and costs of a program escape off site. Therefore the "social benefit/costs" of the whole spectrum of programs and the relationships between them must be reviewed.

Stankey emphasized that a broad approach to planning is needed. Functional planning probably tends to create competitive relationships. Planning programs that offer a package of opportunities generally encourage complementary and supplementary relationships.

In the concept of cost effectiveness Stankey explains that even though economics is a poor method of evaluating recreation programs, planners still need to be sure the public is getting its moneys worth. Planners should give more attention to what they buy rather than to how much it costs.

A most important source is Mitchell's book, Mountain Experience: The Psychology and Sociology of Adventure (1983). This book so intrigued me that it has strongly influenced the direction and scope of this paper.

Mitchell looked first at the sociology of climbing. He divided the question, "What is mountain climbing?" into seven components: planning, equipment, companions, conditioning, travel, technical climbing, talk, and debriefing. Then he answered the question, "What is a mountain climber?" by exploring how climbers interact in clubs and groups. Finally he addressed that age-old question, "Why do people climb mountains?" Explaining the psychology of the experience.

In his preface Mitchell stated, "Understanding the experience of climbing requires attention to the social context in which it occurs. ...It is, most centrally, a social event, a deed done usually with others and always with others in mind." Although much of the book is presented in terms of technical rock climbing, he also relates to activities such as skiing, hiking, and peak bagging.

COMPONENTS OF MOUNTAIN CLIMBING

PLANNING

Planning is the first step toward the mountain top. Mountains may be selected by past experience, others, literature-especially guidebooks, or even commercial offerings. Once the goal is set, information must be gathered including maps, weather forecasts, and guidebooks. This phase often includes contacting Forest Service offices. People either stop in for information or request it over the telephone.

COMPANIONS

Mountain climbing is a social activity. How much intimacy and interdependence there is variable. There is safety in numbers. A group of hikers could be fairly independent through most of the trip, but when inclement

weather hits or one of the group experiences problems, then the individuals must rely heavily on each other. Companions are selected as persons to share the experience in times of success and emergencies.

EQUIPMENT

Choosing the type of equipment to use seems at first like a simple task, but in fact is a very complicated question. Gear must provide protection from storms, cold, solar radiation, wind and the rigors of high altitude. Because of concern for the environment, climbers no longer look to the environment to provide such things as tree-boughs for beds, wood for warming fires, or wild game for food; almost everything needed must be taken along by the climber. This calls for very lightweight materials; today's technology has made mountain climbing easier for a larger portion of the population.

Technological innovations in climbing equipment represent a mixed blessing. They may inhibit the experience of challenge for which mountains are sought in the first place. There seems to be an equation that helps climbers decide whether they are morally right in including a certain piece of equipment. The equipment must be in balance with the challenge of the climb. Judging the balance between tools and tasks is not simple. Less reluctance has been shown using equipment that reduces the hazards of the environment. Warmer clothes, more comfortable boots, and tastier food have all found quick acceptance in the climbing community. What part facilities such as toilets and paved trails might play in how the user perceives the balance between equipment and challenge remains to be determined.

CONDITIONING

Conditioning is an important part of mountaineering. Not only is the climb itself a challenge because of its steepness and length, it also becomes very difficult because of reduced oxygen at higher altitudes. Many people prepare for climbing certain peaks by running or walking programs. There are also those who use the peaks themselves for conditioning exercises for even harder peaks or races. This particular use is growing rapidly on Elbert, where many people can reach a site for high altitude training within hours.

TRAVEL

Travel represents the means of getting to the mountain. With the aid of modern vehicles and roads, many are encouraged to go where few went before. In addition, these users are no longer spread out over several entry points but

instead are concentrated at a few trailheads closest to their goal.

Mitchell noted that skiing, which began as a non-mechanized sport, has developed mechanization to help get around the less desirable task of going uphill. Mechanization may someday be involved in climbing.

IDENTITY

In trying to establish an identity, many people join clubs or organizations related to hiking or backpacking. Clubs offer rewards and recognition for specified achievement. By placing registers on peaks these clubs offer a formal aid to the mountaineer's identity-enhancement efforts. Registers, newsletters, and guidebooks serve to spread the flow of information about routes and peaks to other climbers. Souvenirs such as pictures, rocks, and local patches further serve to help establish and identify the climber.

THE EXPERIENCE

Mitchell wrote about reasons people climb mountains by sifting through accounts of climbers-authors. He explained that climbers have had to tried to justify their sport to conventional society by publishing their reason. The traditional answers to the question "Why do people climb mountains?" fall into four groups designated as ridiculous, sublime, purposeful, or natural activities.

"Ridiculous" assumes that the participants are emotionally ill, morally corrupt, or both. Ancient peoples have thought that mountains were a separate supernatural realm between the mundane world of living people and the heavens, and thus it was considered unwise to trek into this territory.

"Sublime" calls attention to those who focus on the artistic, poetic, spiritually uplifting, or even the transcendental qualities of mountaineering. The sublimity of mountain climbing manifests itself in two ways: as an environment to be experienced and as a medium for creative self-expression. The religious character of the mountaineering experience is a recurring theme.

"Purposeful" includes explanations that climbing is practical, usually in the name of scientific inquiry. Today there is considerably less concern for scientific motivation in climbing.

"Natural" according to modern-day climbers, presumes the sport is natural and requires no explanation.

Another author, Csikzentmihalyi, developed guidelines for the understanding of enjoyment that Mitchell used to clarify the experience of the climber. There is a kind of personal transcendence that is experienced, which

Csikszentmihalyi called "flow." Flow is a special condition of intense energy outpouring, of maximum performance and minimum wasted motion. It is immediately and profoundly rewarding.

There are three elements important to the experience of flow. First, it is important for freedom of choice among a wide range of uncertain outcomes to be possible. Second, people must create some task from these options within the limits of their perceived abilities. Third, they must achieve a level of involvement where the distinction between self and environment become blurred in a flow of experience.

Mountaineering meets the requirement of freedom. It is often undertaken for the intrinsic rewards it offers. The rewards of climbing are climbing itself. Perhaps Showell Styles said it best. "There is no material gain in climbing a mountain. The thing is useless like poetry, and dangerous like lovemaking."

Flow occurs in the context of creativity, and creativity requires a degree of uncertainty. Mitchell classed uncertainty into two classes for the mountain climber, danger and difficulty. Danger is avoided whenever possible. Difficulty is prepared for through learning, equipment, and careful planning.

Mountaineering is an uncertain sport, but it is the uncertainty of one's own limits of skill and ability that is sought. The climber likes solving problems, not gambles whose outcomes are beyond his control.

Some have speculated that all behavior can be explained by the need to reduce anxiety and uncertainty. Maslow disagreed; he found that uncertainty may be desirable for some people. Climbers seem to balance their sense of uncertainty with the circumstances at hand. For example, when stress is great, when outcomes are imminent and uncontrollable, then uncertainty is avoided. If success is near, unusual risk may be taken; if failure seems likely, exaggerated caution may predominate.

While in the flow experience a climber's concentration is heightened but it is also focused on a narrow range of concerns, the here and now. This places the climber in a state in which demands for action are easily understood and there is prompt, clear feedback. This reality is in stark contrast to real life.

If people seek the experience of flow in climbing, what characterizes the experience outside of flow? Mitchell said that beyond flow there are two conditions. Boredom and panic represent an imbalance between challenge and skill, which is brief and temporary; certainty and uncertainty represent an imbalance that is more protracted and marks the day-to-day existence of most people. What comprises one's day-to-day experience influences one's interest in, or avoidance of, mountaineering.

In short, those who experience a surplus of certainty in their daily lives will seek uncertainty in their play. On the other hand, those who view the world as mainly uncertain will seek certainty in recreation.

Following this logic, mountaineers would have safe and prestigious occupations with secure employment; hence, they would be well-educated, white, middle- and upper-class individuals. Mitchell's surveys seem to confirm this.

REGISTERS

There are several articles on registration compliance. Lucas (1983) found extremely variable results, from 18 to 74 percent. He found hikers to have the highest compliance rate. Lucus suggested placing the registration box somewhere away from the trailhead. Leatherberry and Lime (1981) found very high compliance among campers. Using a voluntary approach, compliance was 70 percent; with a mandatory approach, compliance dropped to 61 percent. These authors recommended that signs explain the need for registration. The registration box should be well maintained and located up-trail from the trailhead. They claimed that peer pressure, either imagined or real, seemed to influence the compliance rate.

PREFERENCES

McCay (1978) examined the results of a survey asking what hikers prefer in trail features and maps. He found that a majority of hikers want trail names, directional signs, a natural surface, and guidebooks. Regarding trail maps he found that a majority wanted trail names, major features, distances, property boundaries, and a directional north.

Westphal and Lieber (1986) studied the importance of trail attributes to visitor satisfaction. Although this study was conducted in an urban forest setting, the results may have significance in other environments. These authors found that day hikers ranked the following trail attributes in order of importance:

1. Lack of litter on the trail
2. Scenic views
3. How close the trail is to home
4. How rustic the trail is
5. Variety of plants/trees
6. Opportunity for other activities
7. Lake or stream near trail
8. Amount of wildlife
9. Number of interesting points along trail
10. Enforcement of laws and regulations
11. Number of other users
12. Length of trail

13. Availability of drinking water
14. Number of manmade structures
15. Number of interpretive signs or markers
16. Type of trail surfaces
17. Amount of steepness
18. Amount of information on trail area
19. Number of directional signs or markers
20. Changing slope along trail
21. Variety of environments
22. Number of shelters along trail
23. Width of trail
24. Guided nature hikes provided

The rankings that are interesting in relation to Mount Elbert are that day hikers are only moderately affected by the numbers of other hikers. Also, there appears to be a fine line between placing structures such as water fountains and signs and the effect of having to many manmade structures.

CHAPTER 4

METHODOLOGY

The author has participated in and observed the sport of peak bagging over the last 20 years in Colorado. In the summer of 1988 the author hiked all three of the popular trails up Elbert. The author supervised two trail crews that were trying to maintain these trails, which had not seen any form of major maintenance for at least 5 years. It was this monumental task that planted the seeds for this study. As the author hiked these trails, he looked at them in terms of alternatives, users, problem areas, and opportunities.

The author made it a point to contact the people encountered on the trails. The author asked questions such as where they were from, and did they make it to the summit. This friendly exchange, plus the fact of my uniform usually led to a question-and-answer session about trail conditions, the trail crew and our plans for the area. The author estimates that he talked to more than a hundred hikers in this manner. The author was also able to tell a lot about these users by their age, manner of dress, and their gear. These concerns are those they expressed most often:

1. The condition of the trail. Most thought that something should be done about the erosion, or were glad to see a trail crew working on it.
2. The quality of the water in the streams. This question may have arisen from the recent coverage about Giardia contamination.
3. The lack of Forest Service presence. The author was one of the first rangers many had seen in years. Most seemed eager to talk with a ranger, and it was surprising how many offered this concern without prompting.
4. General questions. There were questions about the weather, and their location, i.e., "How much farther to the top?" The author have also heard this type of question while climbing out of uniform. This could just be typical trail talk, although their sense of being assured seemed heightened when he was in uniform.

While on these hikes the author also looked at other user impacts. The author did not encounter many large campsites, nor was there very much litter. There was some use of the Krummholz area for firewood. Above timberline the author searched out some of the only hiding cover around large rocks and found ample evidence of human waste and toilet paper. Below treeline the amount of hiding cover was substantial so concentrations of waste were not evident.

The largest impacts-and the one the author and the trail crew tried to deal with-were poor trail locations, lack of maintenance and heavy use. The trail were these impacts are most evident by far is Elbert's North Trail.

NORTH TRAIL

This trail is not located on the topographic maps, see Appendix I. Not designed by the Forest Service, it grew from use. Many guidebooks describe this route as bushwhacking from the Colorado Trail by following the ridgeline. It is the shortest trail of the three and uses the same trailhead as Mount Massive to the north. There are some determined hikers who like to climb both peaks from the Halfmoon Trailhead.

The trail follows old logging and mining roads to a point just below treeline. From there on up, many steep grades are encountered that are more than 50 percent. Forest Service Handbook 2309.18 recommends trails have at a maximum pitches of 30 percent. These should be in the form of rock steps and be only 500 feet in length. This continues above treeline as braided trails follow a ridgeline. This ridge stays snow free most of the year because of high winds. On either side of this ridge there are pockets that hold snowfields all year long except for a few weeks in August.

There appear to be many reasons for the braided trail. The main trail is not clearly marked. The author has concluded that his first hike up Elbert did not follow the main trail through several sections. The author noticed that many people hike off to the side of the established tread when descending because the trail is so steep that traction cannot be found even with lug soles.

Another practice the author observed was people hiking in pairs or threes beside each other. Many people seemed to like this form of hiking in meadows and tundra where it is possible to spread out. In this way they are able to carry on conversations easily. This may be another reason why double and braided trails develop.

SOUTH TRAIL

This trail receives slightly less use than the North Trail and is gaining in popularity. It is 1 to 2 miles longer, but is less steep and in much better shape. The scenery is better, in the authors opinion, than that of the North Trail. Much of the lower trail crosses a nice mixture of aspen, meadows, and lodgepole pine. There are many more vistas of the Mosquito Range and Twin Lakes.

The trailhead has been moved in the last few years to a loop in the Lakeview Campground, which requires several directional signs to get to. Users can also drive at least

one mile further if they have a four wheel drive vehicle. This diversity of trailheads may in part cause this route to be less popular.

The trail also appears to follow old logging roads and then mining roads until it reaches a ridge above treeline. There are some steep sections with braided trails but the steep pitches are shorter and the trail is in better condition than the North Trail. Evidence of the two track road has been maintained by hikers walking beside one another.

The wind does not sweep this ridge clear of snow, so this trail has less use in the early summer and late fall. This probably helps maintain the trail, because some of the worst damage occurs to the trail when the snow is melting; people tend to walk on the tundra when the trail is muddy or covered with snow.

BLACK CLOUD TRAIL

This trail is accessed from Highway 92 on the south side of Elbert. It is in very good condition. The longest of the three trails up Elbert, it transacts a variety of vegetative types including conifers, aspen, meadows, and even a pleasant stream. There are good views of La Plata and Twin Peaks.

The trailhead is hard to find, since it is not clearly marked. In fact there is no trailhead as such, just a small road to get your car off the highway. The south-facing slopes usually allow use fairly early in the summer.

Recently, a pair of volunteer students from the Netherlands produced a handout that describes the route and its environment. This has appeared to increase the use of the Black Cloud Trail. See Appendix A.

COMPARISONS WITH OTHER MOUNTAINS

Although hiking use on Mount Elbert is high according to standards on this District, it receives less use than other popular mountains in the U.S. The author contacted managers responsible for some of the most popular climbing mountains in the country. Much can be learned from their problems and how they approach them.

Probably the two most popular mountains in Colorado, Longs Peak and Pikes Peak, are highly visible and accessible from many Front Range cities. These two mountains are also Fourteeners, which adds to their peak bagging status.

PIKES PEAK

Peaks Pike is a well-known mountain that can be accessed either by road, cog train, or trail. Laura Knepp, the Recreation Forester on the Pikes Pike District,

estimated that nearly 7,000 people a year use Barr Trail, which climbs from the city of Manitou Springs to the top of Pikes Peak. The trail is designated as a National Recreation Trail. Knepp said that the trend in use is up and that she has observed an increase in foreign visitors since the designation.

The highly erosive, decomposed granite soil makes trail maintenance difficult. A rail fence was constructed on the lower 3 miles of the 12.9-mile-long trail in an effort to keep people from cutting switchbacks. Trail markers are not used and apparently not needed because the trail is easy to follow.

The trailhead is congested, not only with hikers but also with people taking the cog train. There are restrooms at the trailhead and at the summit. There is also a toilet located at Barr Camp, which is a concessionaire cabin located half way up the mountain.

Knepp said that trail management is also complicated by other events that take place on the mountain. Many people use the Barr Trail to observe the Pikes Peak Hill Climb, a car race up the mountain. Another race, the Ascent Race, involves 1,500 runners, and the Pikes Pike Marathon has 1,000 runners. Both of these races also involve hundreds of volunteers and spectators. The only regular patrol that the District has is the manager of the Barr Camp, who patrols half the trail twice a week.

LONGS PEAK

Longs Peak is located in Rocky Mountain National Park. The author talked with Jim Wilson and Kurt Oliver of the National Park Service's Backcountry Office. Although figures for use were not available, it was felt that the trend in day use is increasing slightly and that the trend for overnight use is declining slightly.

Post and rail fences are used in the first short, steep stretch of the trail to help keep hikers on the trail. Above treeline the trail is marked by painting bulls-eye markers in yellow and red paint. The plan now is to not maintain these markers in the future. The Park Service wants to present a more natural setting, and not appear to "lead" hikers up the mountain.

Toilets that use solar panels to help dry waste were recently installed in three locations above treeline. These unique facilities have worked well; this design is also being used on Mount Rainier. Monitoring devices recorded up to 5,000 uses per summer. Llamas are used to pack out the dried solid waste about once a season.

Wilson related that the Park Service is doing many things to try and rehabilitate the fragile environment above treeline. Jim's Grove, a campground located in the Krummholz area near timberline, has been reseeded and

mulched. This campground is slated to remain closed to camping for at least 10 years; Wilson, however believes it will never be reopened. Wilson also mentioned that thousands of dollars have been spent in the last few years on flying in fill material in an attempt to harden the trail's surface.

The trailhead was judged inadequate for the number of people that it presently serves. The 75-unit parking lot usually overflows with as many as 160 vehicles. When I asked if the Park Service might use trailhead size to limit the amount of use, Wilson said that would not work, as most visitors now park illegally up and down the road and that tickets have not been a deterrent. Wilson did note he also has observed people are beginning to carpool into the trailhead.

The Park Service uses five rangers to patrol on Longs Peak. Because of work shifts, all rangers are not on the mountain at the same time.

MOUNT RAINIER

The author spoke with Lorine Lane, a Park Ranger with Mount Rainier National Park. Because all climbers must have a permit, there are very accurate records of use dating back to 1950 (Roth, 1988). These figures and Ranger Lane also confirmed that use has reached a plateau since about 1979, at about 8,000 hikers per year. All climbs on Rainier are considered technical because of ice and snow conditions. This results in a success rate of only 50 percent. In addition to these climbs, there are an estimated 10,000 day hikers.

The Park Service has tried many different techniques to deal with this use of Rainier, which is generated primarily from the Seattle/Portland area. Trails around the Paradise Camp have been paved along with a split-rail fence. Some painting is used to mark trails, but they rely mostly on volunteer rangers patrolling the trails to keep people on the path. Lane has observed a large number of non-English speaking visitors, because of the large Oriental population in the Northwest, rangers have begun to install multilingual signs on the trail. They also have a unique sign to keep people on the trail: it is the shape of a lug sole with a red slash through it. As trails on the lower portions are often partially covered with snow, people are tempted to avoid the trail and this sign has helped.

The Park Service at Rainier produces its own seedlings and plant plugs for use in trail restoration. The staff also flies in fill material for trail work.

The trailhead is inadequate for the amount of use it receives, but Lane believes that instead of enlarging the area they will use its size to restrict use.

MOUNT WHITNEY

Although this mountain is managed by both the Park Service and the Forest Service, it is the Forest Service that controls most of the access routes and, by agreement, the permits. The author talked with Paddy Hardy, the Information Officer on the District, who is in charge of the reservation system for Mount Whitney.

Mount Whitney is located in the John Muir Wilderness Area and its management is directed by laws and regulation concerning wilderness use. Because use was exceeding the carrying capacity, a limit was imposed in 1985: only 50 hikers per day are allowed to enter the Wilderness Area. For the last four years, all use has been strictly allocated by a mail in reservation system that utilizes a lottery system to distribute the 2,700 permits among 30,000 applicants. The District charges a $3 fee to offset the cost of running the reservation system. In 1988 staff issued 2,754 permits to a total of 8,510 climbers.

The trails have experienced some erosion in the past, which is one of the main reasons that the permit system was put in place. There are two camps at 12,000 feet with the same type of solar toilets that the National Park Service uses. This waste is flown out.

Presently there is no limit on the number of day hikers. This use has grown so much that it is interfering with the tightly controlled management of the mountain. Paddy predicts that day use might soon fall into a reservation system similar to that for the climbing permits.

MOUNT EVEREST

Even the most remote of mountains is facing the impacts of peak baggers. Although The author did not talk to anyone in Nepal about the management of this most famous mountain, an article carried by Associated Press in the January Denver Post reported that Sir Edmund Hillary has suggested a moratorium on climbing Everest because he believes there are too many expeditions going up the mountain leaving a great deal of rubbish and trash on the mountain. "I think we owe it to the mountain not to constantly harass it as it has been in the past 10 or 15 years," he said. Glenn Porzak of the American Alpine Club disagrees saying that the teams only need to be educated to instill in them more of an environmental ethic so that they bring down what they take up.

In summary, although each mountain in this survey faced slightly different problems many of the solutions found are the same. Toilets have been installed on all the mountains, even though this requires expensive maintenance. Fencing, signing, and in one case paving have been used to keep

hikers on the trail. Rangers are used to patrol the trails everywhere except on the Pike and San Isabel National Forest in Colorado. Permits for camping are used everywhere except on the Pike and San Isabel National Forests.

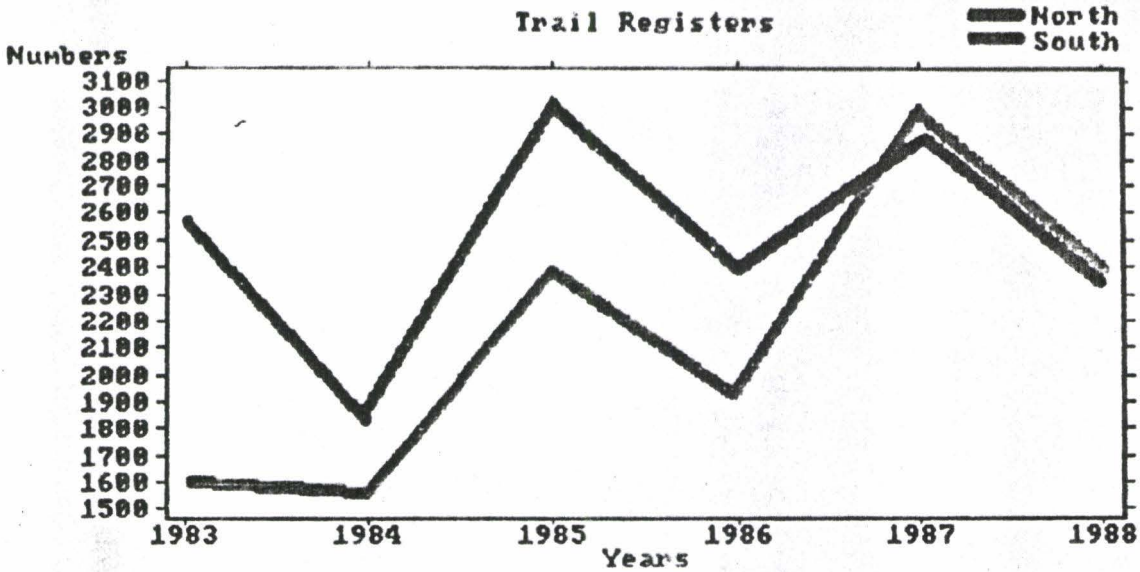
REGISTERS

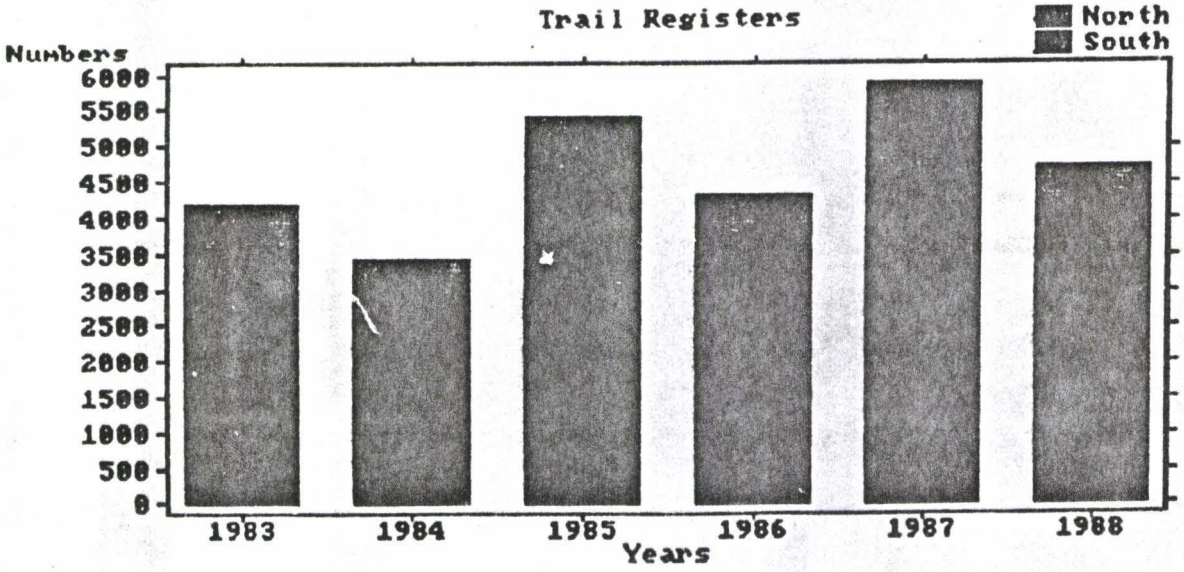
There are trail registers at Elbert's North and South Trails. The office has the results of these volunteer logs going back to 1983. The graph on the following page shows the figures more clearly. Use of the South Trail shows a steady increase over the five years. With a variation of nearly a thousand people, the North Trail shows no apparent trend. These data show an average annual total of 1,861 users for the North Trail and 1,585 users for the South Trail; the difference, 276 is smaller than expected.

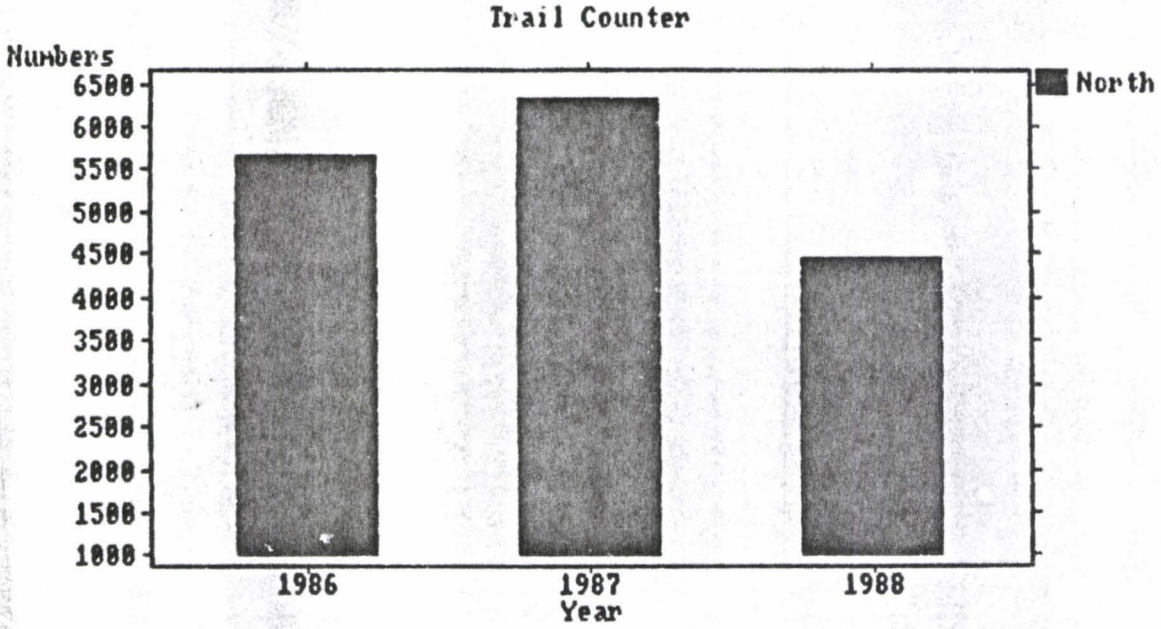
There are also trail counter data for the three years beginning in 1986 that can be seen graphically on the second page following. These data were screened to eliminate periods of time when the counters apparently were not functioning correctly. By comparing the data from the trail counters with those of the registration sheets the percentage of hikers actually registering can be estimated. An average of 65 percent of the people actually registered with a range of between 53 and 78 percent. This figure is nearly twice as high as has been reported previously. This figure is not doubted because it reflects perfectly the needs and observed motivations of the peak baggers. People want to record their accomplishment in a place others will see it; that is why the summit registers are so popular with this sport, and hikers see the trail registers as another outlet for this need.

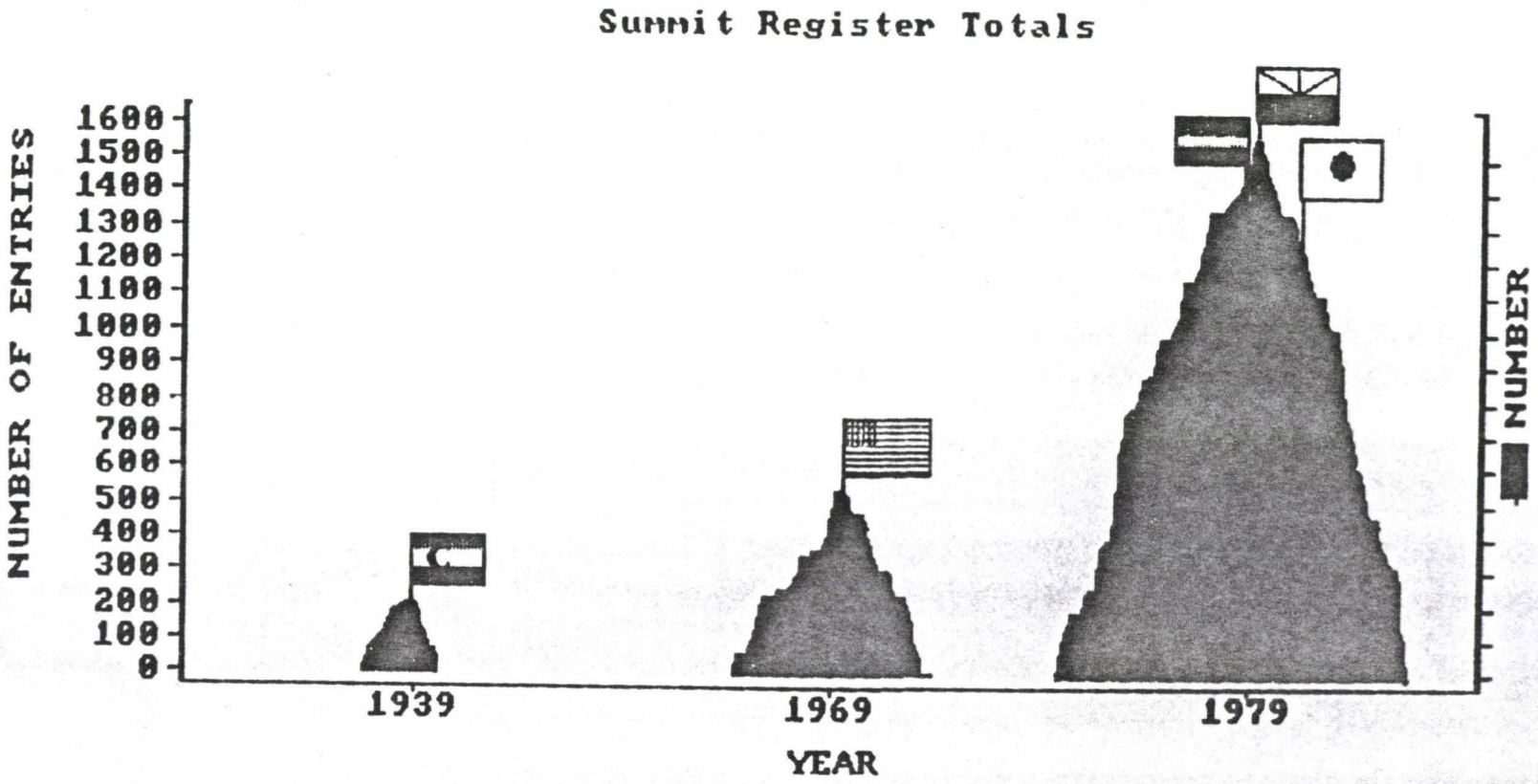
Adjusting the trail register data by this 65 percent compliance rate the annual average number of people beginning the hike up Elbert is 2,512 for the North Trail, and 2,140 for the South Trail. The author estimates the number of people using the Black Cloud Trail to be around 300 per year. These numbers produce a grand total of nearly 5,000 people annually.

The author researched the files of the Colorado Mountain Club which maintains the summit registers of all the principal peaks in Colorado. The graph on the following page shows the trend expressed by these numbers from 1939 to the present. It should be noted that summit registers are not an accurate indication of the number of users. Traditionally a tube or pipe containing paper and pencil, these registers are often secured by a cable to rocks on the summit. As mentioned earlier, this ritual of recording one's name after successfully reaching the summit is a very important part of climbing, and probably almost everyone complies, but there are many associated problems. Even in the best of conditions, using such a register, extracting a


Trail Registers
North
South
Numbers
3100
3000
2900
2800
2700
2600
2500
2400
2300
2200
2100
2000
1900
1800
1700
1600
1500
1983
1984
1985
1986
1987
1988
Years


Trail Registers
North
South
Numbers
6000
5500
5000
4500
4000
3500
3000
2500
2000
1500
1000
500
0
1983
1984
1985
1986
1987
1988
Years


Trail Counter
Numbers
6500
6000
5500
5000
4500
4000
3500
3000
2500
2000
1500
1000
North
1986
1987
1988
Year


Summit Register Totals
NUMBER OF ENTRIES
1600
1500
1400
1300
1200
1100
1000
900
800
700
600
500
400
300
200
100
0
1939
1969
1979
YEAR
NUMBER

piece of paper from a narrow pipe, can be difficult. But on a high mountain top, in strong wind and other bad weather conditions, the task can become very arduous. On such a popular mountain as Elbert, these registers fill up more quickly than the volunteers can replace them. So when all the empty spaces are full, people resort to gum wrappers, check stubs, business cards, or anything else available.

Therefore as interesting as some of the entries may be, only a few years' have survived intact enough to present reliable figures. Appendix E shows an example of a summit register sheet. What is possibly more interesting than the steady increase in numbers through the years is the ever broadening distance people have traveled to get to Elbert. In the 1939 sampling, most people were from Colorado; in 1969 visitors from all over the United States were represented; and in 1979, the register showed a number of foreign visitors.

Comparing certain dates from the summit register with those of the trail registers, it is possible to estimate the success rate of climbers. Using the adjusted figures for the trail registers on two dates, the success rate is 48 percent for the South Trail and 47 percent for the North Trail.

Comments recorded on the registers are a useful source of information about how users feel about their experience. It would be impossible to derive any statistically significant data from these sheets, but it is possible to detect common concerns. Hundreds of comments reflect such general statements as "had a great trip,"" beautiful,"" out safely," and so forth. The author extracted the useful negative and positive comments from registers at the trailheads of the South and North Trails for the years 1986 through 1988. Based on my earlier analysis of the of the registers the author estimate that there could have been 14,911 potential comments. Yet the total number of negative responses was 46 and the total number of positive responses was 9, a response rate of only 0.37 percent. There may be many reasons for such a low number. First, the author think that most people do not have a comment to make until they have hiked the trail. This means making it a point to stop at the register on the way out. Those who do make comments are more likely to be positive in nature about such topics as successfully making the trip and the weather. Second, most hikers are tired and the day is late by the time they return to the trailhead, hindering even the most opinionated users. Third, even though they are tired most people have enjoyed the experience. Enjoying their favorite sport peak bagging, it probably takes extraordinary conditions to turn this mood sour enough to want to stop and comment, especially negatively.

Therefore the author would recommend that these few comments be taken very seriously. Appendix F shows the

entire data base of comments; the results are summarized here.

On the North Trail, comments were generally directed to the conditions of the trail. There were seven comments about the need for switchbacks and trail erosion, some quite lengthy. There were only two specific positive comments. Five people responded by asking for better trail markers and signs, and two questioned the differences between the trail and their maps.

On the South Trail there were 21 negative remarks about the way the trail was marked particularly in the lower section. Three people wrote that the trail marking was fine, but this seemed to be more a response to the negative comments they saw in the register. There were only three negative comments on the condition of the trail, as opposed to four positive comments. There was one comment on maps and two comments requesting outhouses and water facilities.

An interesting comment that was not trail-specific concerned the six negative remarks on the lack of the summit register or the lack of space on the trail register to add your town and state, additional evidence of how important registers are to this group of users. In fact, it is rare to find any device available to the public that is as immune to vandalism as are registers on mountains or trails.

Summarizing what the author believes these three years of comments reflect about the users, we know that trail signs and markers are very important. These hikers not only do not want to get lost, they do not want to have to think about were they are supposed to go. These users are generally used to jogging on roads and living in an environment where direction, signs, and the flow of people is clearly evident and regulated. The comments regarding problems with maps also speak to this fact.

Trail conditions are a concern as well, although this concern is more a response to the peak baggers' needs than to possible environmental problems. The most frequent comment was that the trail is too steep and needs more switchbacks. This thought is in sharp contrast to the few comments concerning erosion or the need for waterbars, even though portions of the trail are evidently in bad condition, even to the casual observer.

Two hikers voiced the need for outhouses and water facilities. Although this is an extremely small number, The author thinks that the fact that there were any is important. It may be difficult to be vocal about something as culturally delicate as human waste.

PAST AND PRESENT MANAGEMENT

A review of newspaper clippings revels major crossroads in Elbert's management in the recent past. A ski area and recreation complex was proposed for the slopes of Elbert in

the winter of 1969. When one of the main proponents was killed in an airplane crash, the project likewise died.

In 1971, the District banned motorized travel on the slopes of Mount Elbert. The banning was partly in response to all-terrain vehicles, which had been used to drive to the top, and to studies in progress to determine which areas of the District should be considered for Wilderness Area designation. In 1972 the Mount Elbert area was included in a Wilderness Area proposal, but later was dropped from the final proposal, largely because of recommendations of the District Ranger.

In about 1976 the Main Range Trail was renamed and made part of the Colorado Trail. This trail was constructed and upgraded by volunteers and received both good publicity and extensive use as a result. The Colorado Trail is used in the lower approaches to Elbert by both the North and South Trails.

Volunteers were also called in to close two of Elbert's main trails located on the east face between the present North and South Trails. One was a well designed trail with numerous switchbacks, the other was not very well developed. There was such a problem with hikers cutting these switchbacks that a dollar-sign-looking trail developed. Motorcycles also used this trail with ease, and once above treeline sped off across the tundra. Because it was believed the trail would continue to attract more hikers, it was closed and particular attention was given to obliterating any sign of the trail. Use of this trail stopped completely and motorcycles were never a problem here again.

Plans were made to make the South Trail the main approach to Elbert. Possible right-of-way problems kept the District from constructing a trailhead near the beaver ponds, located near the intersection of the Colorado Trail and the South Trail. People began using what they called the North Trail. This use was completely unplanned, and simply followed a very steep ridge up the northeast side of Elbert. Many guidebooks described this approach as bushwhacking. At some point the District acknowledged the trail and installed a trailhead, signs, and a register.

In 1985 the trailhead for the South Trail was moved from the overlook on Sure Pretty Drive to a loop in the Lakeview Campground. This has caused some confusion for hikers, since there are several starting points for those with four-wheel-drive vehicles on the South Trail.

The Forest Land Management Plan places the lower sections of the three trails in a rural and roaded-natural prescription area (2A). The emphasis of these areas is on recreational opportunities. The maximum capacity for this area is 2.5 People At One Time (PAOTs) per acre. All Frissell code class 5 campsites should be closed and rehabilitated.

The rest of Mount Elbert falls in the semiprimitive nonmotorized prescription area (3A). Carrying capacities for trails are a maximum of 11 PAOT's per mile. Area-wide capacity limits are 0.08 PAOTs per acre. All class 5 Frissell coded campgrounds are to be closed and rehabilitated.

The District's emphasis is to complete all campground inventories in Wilderness Areas, as these are needed to conclude the Wilderness Implementation Schedules. Therefore, no campsite inventories have been completed on Mount Elbert. It is believed that there are relatively few campsites on Elbert and even fewer class 4 or 5 Frissell coded sites. Even so, it's probably worthwhile to complete this inventory so that baseline data will show both future trends and problem areas.

The trail registers of both the North and South Trails show averages of 40 to 60 people registering, which translates to 54 to 81 people actually hiking the trail during weekends. This may show a maximum PAOT of between 9 and 18 per mile, especially in the lower sections of trail. This indicates that the use is either at the maximum capacity or beyond during many days of the season in the 3A prescription area which is 11 PAOTs per mile. The area wide capacity of 0.08 PAOTs per acre is obviously exceeded on the mountain summit, when figures of 30 to 50 people there at one time are normal.

The capacity for the 2B prescription area of 2.5 PAOTs per acre is not being exceeded, depending on how large is the area of concern. Given the maximum of 81 people in a day at one trailhead, these people would all have to be within 32 acres to be at capacity.

The Forest Plan prescriptions closely follow the ROS classification system. The Recreation Opportunity Spectrum (ROS) of the Mount Elbert area would fall between the roaded natural and semiprimitive settings. Nothing at present conflicts with the designated ROS settings.

Trail inventories were completed in summer 1986 by two seasonal staff and two volunteers, (see appendix G). Although these logs accurately measure the distance of the trail and the number of structures presently on the trail, they lack the detail needed to observe poor trail location, maintenance, or condition. Neither of the seasonal staff members enlisted to complete these inventories was skilled in trail maintenance or trail construction. Without the benefit of actual knowledge of the trails, these inventories are of limited use.

Recreation Opportunity Guide (ROG) sheets are provided free of charge to the public. The latest ROG sheets cover all three trails and were updated in March 1988; see Appendix H. Very popular, these sheets describe many details about the hike. Direction are given to the trailhead; the length and elevation of the trail are

graphically displayed; and a small map is provided to show the vicinity and major landmarks around the trail. Other information is also covered, including a brief history, hints on climbing the mountain successfully e.g., proper clothing, best times to start and finish, rules and ethics, and precautions on water, lightning, and weather.

In the fall of 1986, a small trail guide was developed for the Black Mountain Trail; see Appendix A. It describes the flora and fauna one might encounter along the trail. A map and small drawings are included. This guide is available for a donation of $.25, which helps defray printing costs. This guide has been helpful in diverting people away from the other two popular trails.

Significant trail maintenance had not been completed on any of these trails in the last 10 years until 1988, when $6,000 was allocated to begin special maintenance on the Elbert's North and South Trails. Two crews of about three each worked for more than a month. Poor trail location added to the frustration of this project. Several minor reroutes and one major reroute were all that could be accomplished in the time allocated.

In some areas with braided trails, sod from the side of one tread was cut and moved over in an attempt to widen one tread and leave one main trail. The success of this technique is being monitored but is not yet know.

During the work, it became apparent that major decisions had to be made regarding these trails. The problems had grown beyond what could be accomplished with trail maintenance. As the person in charge, The author decided that large sections of the North Trail needed to be redesigned, although this may be impractical because of large snowfields that remain much of the year, or it may prove too costly. The closure of this trail seems like the easiest solution.

The South Trail has several problems with signing and confusion starting at the trailhead which is located off the main road in a loop of a campground. Then there are several roads that cars and hikers intersect before finally transferring from the Colorado Trail to the South Trail. Although the South Trail does not have nearly the amount of steep grade that the North Trail does, it still could use some redesigning in places. Since the trail appears to follow old roads, there are long sections of double trail that seem to give rise to braided trails in other sections.

Compared with the North and South Trails, the Black Cloud Trail is in excellent shape. It is a better designed trail that has several switchbacks. As always, there are problems with people taking shortcuts across the switchbacks and keeping waterbars cleaned out, but on the whole this trail presents no problems. Once you are beyond treeline, the route follows the ridge up the mountain. This section should be studied to see if more and longer switchbacks

could be constructed. This area is rockier than the problem areas on the other two trails, the potential for vegetative loss and erosion is less.

CHAPTER 5

Alternatives

This project presents a difficult combination of a harsh environment and a large and persistent user group. The impacts of the peak baggers are not so much on the environment as it is on themselves. Their impacts have an influence on the quality of the next user's experience and not so much on soil erosion. This situation is compounded because proper planning was not completed on trail locations and facilities.

In this section several of the more likely alternatives to solve problems associated with peak baggers are discusred.

ELBERT'S TRAILS

ALTERNATIVES TO ELBERT'S MAIN TRAILS

At least two trails have been closed, located between the present North and South Trails. Since they were not exposed on a ridge, snowfields were a problem much of the year.

There is a little used trail that starts from the South Halfmoon road and continues up the west side of Elbert. This trail is similar to the North Trail in that it climbs very steeply and was not a planned trail. To access this route requires the use of a four wheel drive vehicle and a certain knowledge of maps and mountaineering.

SOUTH TRAIL

The South Trail has a couple of steep areas that need the construction of switchbacks or rock steps to halt the increase in braiding and widening of the trails. There is not a pressing need to relocate any major portions of the trail.

BLACK CLOUD TRAIL

The Black Cloud Trail is in good condition and is designed very well up to the final climb from treeline to the summit. This section could be examined to formalize the ascent trail and to add switchbacks or realign portions of the trail. There is a high proportion of rocks to soil

above treeline on this trail so that footing is more secure and erosion less likely, even in very steep sections.

NORTH TRAIL

Because the North Trail was never designed, the trail is extremely steep, has no switchbacks, and in general lacks good design. Large sections of the trail are beyond repair and others will eventually succumb to the intense use. Major reroutes with the addition of switchbacks may solve some of the poor design problems, but this would be very costly and involve significant changes to the environment. There is some doubt whether adequate locations for switchbacks could be found that would remain snow free most of the year.

Paving long sections of the steep trail are probably not an alternative, since snow and ice are likely to cause severe safety problems. The use of buck and pole fences to keep hikers from widening the trail does not address user satisfaction. Closing this trail is certainly a logical alternative, since there are presently two other trails that serve Mount Elbert. All that the North trail offers is a slightly shorter route and a convenient way for people who wish to climb Elbert and Massive together.

TRAILHEADS

The only existing facilities are trailheads, and there are problems with all three. The Black Cloud Trailhead is a two-track road located just off Highway 91 near the Twin Peaks Campground. The turn off is not only hard to see and use, it presents a safety problem. The amount of traffic on Highway 91 is substantial. Once off the road there is no actual trailhead, but there are openings for a dozen cars. The obvious alternative here is to construct safe access to and from the highway and a trailhead that could park around 30 cars.

There are several trailheads on the South Trail. The lowest is located in Lakeview Campground, which has plenty of parking, camping, restrooms, and water. Unfortunately, it is rather difficult to find this trailhead, as users must leave the main road and wind through the campground past several junctions before arriving at the traihead. From the trailhead to the actual South Trail, there are several other dirt roads and junctions that make the route very confusing. Just off the main road is an overlook with parking for 10 cars, which also continues to be used as a trailhead. Those with a four-wheel-drive vehicles have access to a couple of other drop-off points along the way, which generally cut off a mile or two from the length of the hike.

A solution here would be to locate a trailhead near the beaver ponds. This would require the upgrading of the four-

wheel-drive road, and resolution of a right-of-way problem here. Since a small percentage of hikers arrives the night before, the construction of a few primitive campsites at this trailhead might be useful.

The North Trailhead is shared with the Mount Massive Trailhead; this combined trailhead can accommodate around 10 cars. On weekends this is inadequate for the amount of traffic, so hikers park their cars along and off the road, causing congestion and safety problems. There are no water or toilet facilities at the trailhead, but there are toilets, campsites, and water pumps at the Elbert Creek Campground, which can be seen from the road and is within walking distance from the trailhead.

The alternatives here include enlarging the present trailhead. This contradicts the management decision for the Massive Wilderness Area, in which the number of users exceeded capacity in the Mount Massive trail corridor. It has been recommended in the Mount Massive Wilderness Implementation Schedule that this trailhead be left small and that another separate facility be built for the North Trail. The schedule has an alternative, relocating the trailhead somewhere before the Elbert Creek Campground.

TOILETS

There are possibilities for additional facilities. Toilets are located on most other popular mountains. With more than 5,000 people climbing Elbert in a few months, there appears to be a need to contain that amount of human waste. There are only a few locations that afford privacy above treeline, these have become littered and must detract from the users' experience. Now that technology has advanced, solar--powered toilets are being installed in backcountry locations and the public will soon expect them. Small vault toilets located at the trailheads would probably decrease the use of these solar toilets and make those trails even more attractive.

WATER

Water is supplied near all the present trailheads. An alternative here would be to advertise this fact at trailheads along with warnings about Giardia in the streams. This same idea could be applied to toilets. Locations of toilets at the start of the trail and toilets that may be located up the trail should be advertised in the trail brochures as well as on trailhead signs.

Springs could be developed along the trail that would attract many users. Many hikers now carry filters that can make stream water safe for drinking and eliminate the need to carry large amounts of water.

MAPS AND BROCHURES

ROG sheets or pamphlets with clear maps and some interpretation such as the Black Cloud brochure, could be provided at trailheads either free or with a donation. Maps should be displayed at trailhead signs.

SIGNS

In addition to trailhead signs that should have maps, rules, water and toilet locations, signs should be placed at all junctions. There is also a need for signs with information about distances and possibly even elevations.

Signs could be used to keep hikers on the trail. A simple outline of the sole of a hiking boot with a red slash has been successful. Other tricks might include a few sequential signs in a row, with a "Burma Shave"-type message. Educational signs could also be placed on trails advising hikers that these trails are closed or that sections are being rehabilitated.

REGISTERS

As registration is an important part of peak bagging, the registers at the start of both the North and South Trails could be improved and better maintained. The peak register is maintained by the Colorado Mountain Club, which relies on volunteers to maintain the sheets and make sure that the records reach their office, where they are filed. Although it would be more elaborate, a modified trail register box that could withstand the environment on top of the mountain would make registration easier. The present system of a tube with rolled up registers is not convenient and lacks efficiency when many users must open and close it. Another system that might work is registration cards that are deposited in a box-not as satisfying to users because they would not be able to read the comments or notice the names of fellow hikers.

Taking the idea of registration one step further, there is the possibility of sending certificates to those hikers who successfully complete the climb. The Park Service has started a successful program of stamping a "passport book" with each visit to a park. Collecting parks is very similar to collecting peaks. Care would have to be taken so that peaks that are located in Wilderness Areas or that have trails not designed to handle peak baggers are not included in this program.

DO-NOTHING ALTERNATIVE

There is of course the alternative of doing nothing. The current trends noted above would probably continue: the

North Trail would probably become so wide and eroded that many people would begin to avoid it in favor of the other two trails. Its use would continue, however because a large percentage of hikers rely on the Forest Service to mark and map acceptable trails.

The South and Black Cloud Trails would gain in popularity. The confusing trailheads at both locations would, in turn, cause more users to become dissatisfied. As the poor trail sections of the South Trail grow worse, serious trail maintenance problems will result. All trailheads would be overflowing with traffic through much of the summer seasons.

The lack of toilet facilities would become very obvious as hikers experience backcountry toilets in the National Parks. There is the possibility of other diseases being contacted from the streams surrounding Mount Elbert.

As this trend of degradation continues, the mountain might receive enough bad publicity that users would avoid it in favor of neighboring mountains-mountains like Massive, La Plata, and Harvard, all near by. They offer a more challenging climb and until now do not show the impacts of high use the way Elbert does. The problem with this scenario is that most of the other Fourteeners in the state are located in Wilderness Areas; this puts constraints on the type of management and use of the mountains. It is much easier to accommodate peak baggers on Elbert because the mountain is not located in a Wilderness Area.

EVALUATION OF ALTERNATIVES

The general strategy in the selection of alternatives is based on a broad approach. There should be a package of opportunities that cover a wide range of experiences so that the user is able to make a selection. In this District there are a dozen fourteeners and many other high peaks as well. Some are located in Wilderness Areas, and others are located were you can drive to the summits.

Many of the other popular peaks on this district are located in Wilderness Areas. The management of these peaks is restricted, capacities are more strictly enforced, and the use of motorized tools is prohibited. The goal in this part of the Recreation Opportunity Spectrum is to provide a setting that is conducive to solitude and nature study, and contains very few or primitive structures.

Clearly there is a need to accommodate the demand for the sport of peak bagging, although this type of use is not very compatible with the management of Wilderness Areas. The goal should be to present a positive experience for the peak bagger on Mount Elbert, which concentrates that use here, rather than on mountains in Wilderness Areas.

Within this general strategy there is an approach to the management of the mountain itself. In order to provide

the best opportunities for satisfaction to the hiker, we need to focus our efforts on fewer routes. By eliminating the North Trail, with its many problems, we can upgrade the other two trails to attract hikers and minimize dissatisfaction with closing the North Trail.

One of the first orders of business is to adjust the capacity limits on the 3A prescription area in the next planning cycle of the Forest Plan. Peak bagging was not considered when this carrying capacity was derived. The trail capacity is already being exceeded, a trend that will continue. There is no need to curtail this amount of use based on the needs of the users. Therefore there was no consideration given to a permit system or to other types of actions that would limit use. There could be a point where a newly defined capacity is reached; a circumstance that should be considered in the future.

The following is a ranking of solutions based on the satisfaction of the user, the best return on the cost, and effects on the environment.

1. Closure of the North Trail. The use of volunteers or clubs is the likely method of achieving the closure. Guidebook authors and publishers should be contacted to see if inclusions of information about the North Elbert Trail can be deleted in future editions.

Forest Service Visitor Information Services would have to engage in a campaign to effectively make this switch in emphasis. Detailed maps and trail guides would be made available to the public at offices as well as at the trailheads.

2. The South and Black Cloud Trails would be improved to adequately handle and attract increased use. This would include construction of some switchbacks and small sections of rerouting. Double trails where they exist should be widened into one trail to encourage people to stay on the trail in other locations. These wide sections of trail should be located in gentle terrain where hikers tend to walk side by side. Rocks steps might be considered to span short sections of steep terrain.

3. Directional signs would be placed at all intersections. Distance signs would be frequently placed along the trail. Signing to keep hikers from cutting the switchbacks or leaving the trail should be erected.

4. Trailheads would be constructed at the Black Cloud Trail and near the beaver ponds on the South Trail. These trailheads should be easy to find and use. Toilet facilities would be placed at both locations and directions to potable water would be displayed. Primitive camping facilities could be constructed near the South Trailhead. Once this phase is completed other actions should be taken to help increase the satisfaction of the user. This should make Elbert more attractive and divert hikers from high peaks in Wilderness Areas.

5. Trail registers should be carefully maintained. This will help not only in monitoring use, it would also give the peak bagger the satisfaction of being able to "sign in." The Forest Service should seek cooperation with the Colorado Mountain Club to install an easy-to-use summit register that would survive the environment. A certificate could be sent later to those hikers who had successfully registered. This should only be done if the faclities in place are able to accommated the increase use.

6. Solar-powered toilets would be the next action item. One toilet on each of the two remaining trails would be adequate. They should be placed above timberline in such a way as to be compatible with the landscape.

7. Education in the form of personal contacts on the trail would be helpful in implementing these alternatives. There are several possible ways to accomplish this. The use of seasonal staff or volunteers in Forest Service uniforms would be most effective not only in educating the users about low-impact camping and hiking they also would provide a highly visible representative from the Forest Service, which is one of the more important needs of the peak baggers.

A possible danger with implementing all these alternatives is that trying to satisfy the needs of the users will begin distracting from their sense of adventure. If too many challenges and obstacles are eliminated, the peak bagger may shun the well-designed trails, the toilets, and the rangers in favor of some other route that allows them to feel a sense of challenge.

In reviewing the management of other popular mountains that have installed similar facilities, this concern does not appear to be a significant problem. Most users seem ready to accept these manmade intrusions. They may realize that certain measures are needed to lessen the negative impacts their sport brings to the environment.

CHAPTER 6

Plan Implementation

The timing of each of these action items is critical to the success of the project. Before effective closure of the North Trail is completed, the other two trails need to be improved. The present staff shortage in the Recreation program on the Leadville District would make any phase of this plan extremely difficult to accomplish. There is a proposed organizational plan that would add a GS-11 staff member for planning and budgeting and a GS-9 staffer in Wilderness and Trails; this would allow for the personnel required to implement this plan. The latter staff member would logically be the one in charge of initiating the plan.

With such staffing, field work could begin as early as the summer of 1989. Someone trained in trail construction could lay out switchbacks and reroutes to alleviate the worst problem areas on the South Trail and to avoid potential problem areas on the Black Cloud Trail.

An engineer should look into the possibility of constructing a trailhead near the beaver pond area, see appendix I for a map of proposed facilities. This would include the improvement of the road for a two-wheel-drive vehicles and either acquire the right-of-way or rerouting around the private land to have access to the trailhead.

A trailhead also needs to be constructed for the Black Cloud Trail. As there are no right-of-way concerns, very little road construction would be needed.

These two trailheads, the road construction, and the trail improvement could be proposed as a Capital Improvement Project. The request should be submitted, allowing for funds to cover engineering and possible right-of-way acquisition in the first year of a multiple-year project. Cost estimates will develop from engineering surveys and better trail inventories.

Once these two trails are upgraded, the North Trail can be closed. This could be accomplished either with seasonal staff, volunteer groups or a contract. Although a bulldozer could be useful in some locations, manual labor and horses should be able to accomplish the restoration.

Waterbars would need to be constructed to divert water from the trail and slow down the sheet erosion. Reseeding with a variety of high-altitude grasses and forbs should be aided by the use of mulch in the steepest and widest sections. Soil erosion is not the main concern in the

rehabilitation; the trail would, in several decades, heal itself if it were no longer used. More than anything else, it is important to conceal the existence of the trail to hikers to discourage continued use. Crews would have to haul, from the surrounding area, a large amount of logs, branches, rocks and other debris in order to conceal the trail. This alone would probably not deter the "bushwhacker." A sign explaining the rehabilitation efforts should be placed near the old trailhead and at the junction of the Colorado Trail and the Elbert's North Trail. This message should also be included in the trail brochures of other trails to inform hikers who may be planning on their descent via the North Trail. Public education could also take the form of articles in newspapers, hiking club publications, and magazines such as Summit and Backpacker.

The cost of solar powered toilets could be included in the proposed Capital Improvement Project. The National Park Service estimated that it would cost $6,000 to build and install one of these toilets. This would occur in the project's third year. There would be one located above treeline on both the South Trail and Black Cloud Trail. The location of these and other facilities at or near the trail heads would be clearly explained on the trail brochures and information signs.

See Appendix J for a map of the proposed facilities.

Unless a contributor is found who is willing to commit a large amount of capital to this project, the following timetable is based on the submission and acceptance of a Capital Improvement Project.

First Year

- Submit Capital Improvement Project proposal
- Inventory South Trail and Black Cloud Trail
- Inventory campsites, close class 4,5
- Request engineering assistance for the construction of the trailheads and upgraded road
- Resolve right-of-way question on the South Trail road
- Start design of trail brochures
- Continue to divert people to other trails besides North Trail through Visitor Information Services

Fourth Year

- Begin upgrading of trail
- Construct trailheads and improve roads
- Set up a cooperative agreement with Colorado Mountain Club to build and maintain a large flow-type peak regiser
- Change PAOT capacities during Forest Plan rewrite

Fifth Year

Close North Trail and begin rehabilitation
Install solar-powered toilets
Start Elbert certificate program
Begin to monitor use with backcountry rangers
Rangers should be present every weekend on either Elbert or Massive during the summer season

CHAPTER 7

Monitoring

Measures should be taken to ensure that the actions taken are producing the desired results. Several levels of monitoring can be employed, and are described below, in order of increasing cost, least to most.

Trail registers are a good source of user information. With very little effort, fairly reliable use figures and trends can be followed. These can be interpreted to see if the carrying capacities are being exceeded. Every couple of years a trail counter should be installed to help validate the figures that are derived from the registers.

Comments useful to Forest Service management can often be found on the registers. These should be read by the Recreation staff on the District who can chart trends in each category of comments as they become apparent.

Trail inventories should be completed at least every three years by someone who is knowledgeable in trail maintenance and the goals of the project. This will show if maintenance is adequate for the amount of use. Trends could indicate areas where trail design is flawed and needs adjusting. The problem of switchback cutting should be watched closely. Rangers should also look for signs that the North Trail is being used, or if any other routes begin to become popular.

If backcountry rangers are used, this form of personal contact would be a rich source of user feedback. The Recreation staff should ask that these rangers keep informal tabulations of the types of comments and questions that they encounter. There is no better method of monitoring than this type of one-on-one contact with the public on the trails.

Someone should keep informal records as to the amount of solid waste that is being removed from the solar toilets. This information might indicate use or preference. Vandalism could indicate user dissatisfaction. The Recreation staff should note any trends in vandalism to any facility.

Simple polls or surveys could be taken of the hikers. The easiest method would be to poll people who had registered at the peak registration box or ask a club like Colorado Mountain Club to poll its members. A simple questionnaire could be included with the certificate for successfully climbing Mount Elbert.

Perhaps a college student could make this monitoring part of a project or study, which would require only supervision and per diem.

Management should carefully analyze registers, trail counters, or increases in trail maintenance problems on nearby high peaks in Wilderness Areas. Large increases in use here may indicate that users are beginning to avoid Elbert; it may also signal an increase in peak bagging in general.

The Recreation staff should keep in contact with those managers of other popular mountains. Advances in management techniques and facilities often occur at the field level and this information is not yet readily disseminated.

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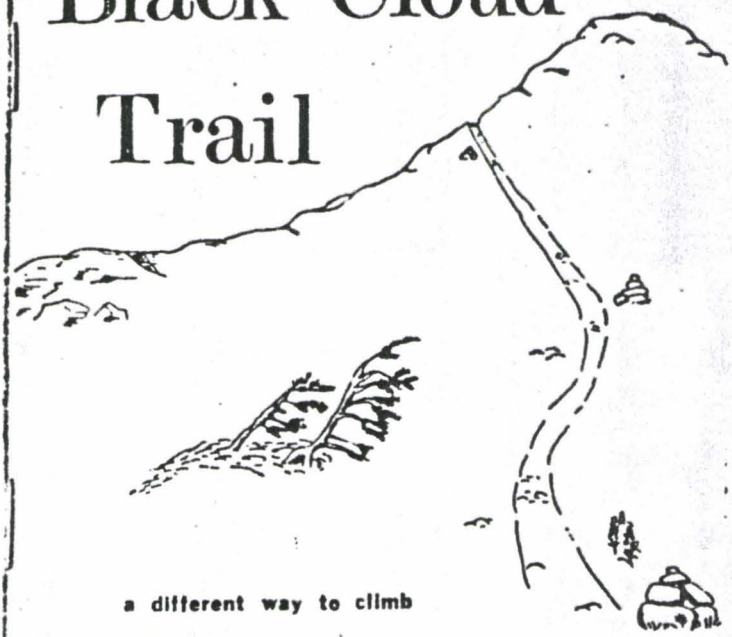
APPENDIX A

BLACK CLOUD TRAIL BROCHURE

Black Cloud Trail



a different way to climb

Mount Elbert

The writing of this booklet was made possible to me by the Leadville Ranger District of the Pike and San Isabel National Forest. It was part of a practical experience program for my study in biology, environmental education. I'm studying at the State University of Groningen, The Netherlands.

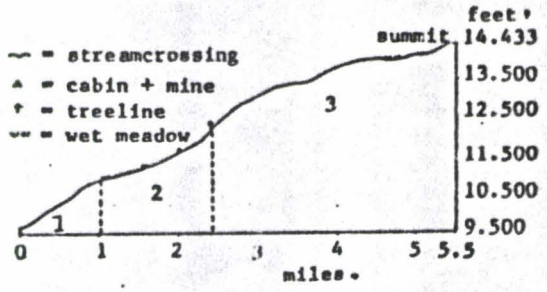
I thank all the people from this district, who have been a great help and inspiration to me and made my time in the United States to an experience I will never forget.

Margriet Moerenhout

August 1986

Reading this booklet means you have decided to take a hike on the Black Cloud Trail. Or, maybe you haven't decided yet and want to read this to see if it's a suitable trail for you and your companions. If you decided to go, you won't be sorry about it. It is one of the most varied trails of this district. You will see several types of vegetation, from forest to tundra, wet to dry. Animals that have chosen Mount Elbert for their home are muledeer, marmots, pikas and many others.

Hikers must be in good physical shape to make it to the summit. Even if you're not sure you will make it to the top, don't stay home, just do part of the trail. In this booklet the trail is divided into three sections, each of which has its own description. You can find the sections on the map on page 12 and 13, and on the crossection below.



However, hiking this trail is not as easy as a Sunday walk in the citypark. The trail is long and sometimes rocky and steep. Therefore, prepare yourself well and don't forget the following things:

- Take a pair of good fitting, not too light hikingshoes. Parts of the trail are pretty steep and so can easily cause blisters.

- each person needs at least 1½ quarts of drinkingwater. Take it with you!

- Bring warm clothes, even when the weather looks good when you're leaving. You may need a warm coat, wool gloves and hat, and raingear.

- Leave early. The afternoon in the mountains often brings thunderstorms.

Before you leave, tell somebody where you're going and when you're planning to be back.

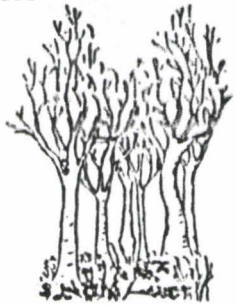
A person should spent several days getting acclimated to high altitudes before hiking. If you didn't have the time for this, you may show symptoms of altitude sickness when you come higher. These are cough, nausea, staggering gait, headaches or desorientation. The best way to handle this is to take the person down to lower elevations. If it's not too bad, you can suffice with eating quick-energy foods such as dried fruit or candybars.

Another danger above treeline is lightning. Being struck by lightning is a very real possibility. Think ahead and get to safe areas before the storm hits. Safest are forested areas, away from the tallest trees. If you can't get to treeline in time get away from any metal material (stove, backpackframe etc.) and go sit on an insulating material like a poncho, placed on a rock.

A last advice: Take a look at the bulletinboard to see what the Forst Service wants to tell you before you leave. There will be regulations posted that you will be responsible for.

SECTION 1. Elevation 9720-10860 ft.

When everybody is ready, it's time to go. The first few yards the trail trailgoes along a dirt-road, but it will very soon change into a trail. The next one or two hours You will hike through a mixed forest with Aspen and different Pine trees. Because of this mixed, varied character, many smaller herbs are able to find a place under these trees. The light-loving plants will grow under the Aspens because these have a pretty open canopy. They don't even have leaves at all from autumn to early spring. You will find the shade-loving herbs under the more dense canopy of the Pine trees.



All these plants attract a wide variety of small and larger animals which feed on them or use them for shelter or nesting-places.

If you're a well-experienced mountainhiker, maybe you will know most of these plants and animals and their stories. For the people who don't know them, some of the most common ones will be described below.

The Quaking Aspen are the birch-like trees with their white, smooth bark and fresh green leaves. Although they look like birches, they're not even in the same family. When you're near some Aspen in summer, sometimes you will rub your eyes and ask yourself if these are realy snowflakes you see floating around. They're not; what you see are the very small seeds of the Aspen, covered with a fluffy coat, so the wind can take them away. Some will drop on a favourable spot to produce a new Aspentree. But most of the small trees you see are not grown from seeds. They are sprouting from the roots of the adult trees. Foresters call these little offsprings: "root suckers".

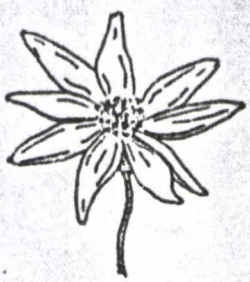
It doe.n't matter who gave the Mountain Bluebell its name, but it is a very suitable name. The flowers are bent downwards like a bell. The flowers are blue, although some have a pink cast. But there is more to say about this very common plant. You will only find it in areas with enough moisture like riverbanks or damp, grassy meadows. As it is a sappy and fresh green plant, you can imagine there are many animals which love this plant for dinner. It is grazed by deer, elk, bears and by the Pika, which stores the dried leaves for the winter. The Mountain Bluebell is a fairly large plant, 1-4 ft. tall, so it gives shelter to many animals, even the bigger ones like elk and deer, which often give birth to their young under its protective cover.

Muledeer inhabit this mountainslope in pretty big numbers, so you have a good chance to meet them. Unless, of course, you're hiking with a group of noisy people or if your dog is enjoying this trip, too. Muledeer aren't family of our domestic mules, but if you take a look at their ears, you can understand why they are called so. These large ears aid in detecting danger at long range. In summer we can find the deer high up in the mountains, even above treeline. But when the snow begins to cover the plants they graze and the weather becomes colder, they will move downhill to the shelter of the woods. In severe winters, when even the herbs in the forests are unreachable under the snowcover, the deer will feed on the bark of trees, especially Aspen. You can see the teethmarks on many trees. The fresh marks are light coloured, while the older marks turn black.

On many sunny, dry slopes in Colorado you can find a slender plant with a dense cluster of bright-red flowers on top: the Indian Paintbrush. It looks quite normal, but there is something strange about this plant. It doesn't make all its own food from water and sunlight like plants normally do, but it takes part of it from other plants. It penetrates the roots of the host-plant with its own roots and sucks the nutritious sap out of it. This is, of course, harmful for the host-plant. Therefore this plant is called a semi-parasite.

: open woods on moist soil one can find a hairy ant with a conspicious yellow flower on top. is plant is called Arnica. It is a member of a range plant family we call the Composite. The lowerheads of all the members of this family re composed of many very small flowers. If you ake a close look, you can see that there are two inds of flowers: the tubular ones with a star top in the heart, and the flat, bigger ones the outside. These latter are often confused ith the leaflets of a flower.

Arnica is an official drug plant. The salve made fromthis planthas a good healing influence on twisted ankles and other joints. It also aids in keeping down infection when applied to cuts.

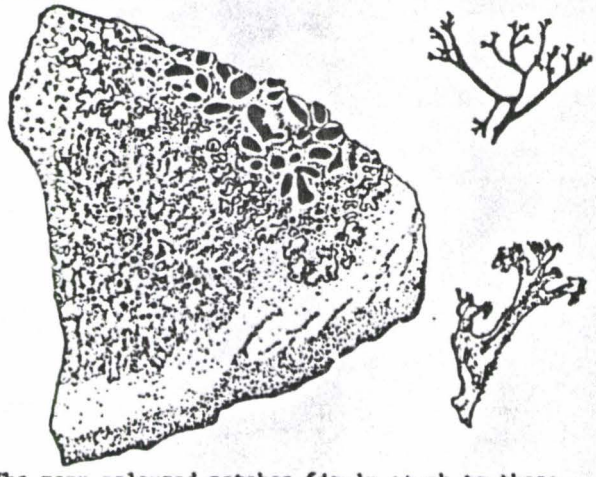


SECTION 2. Elevation 10860-12200 ft.

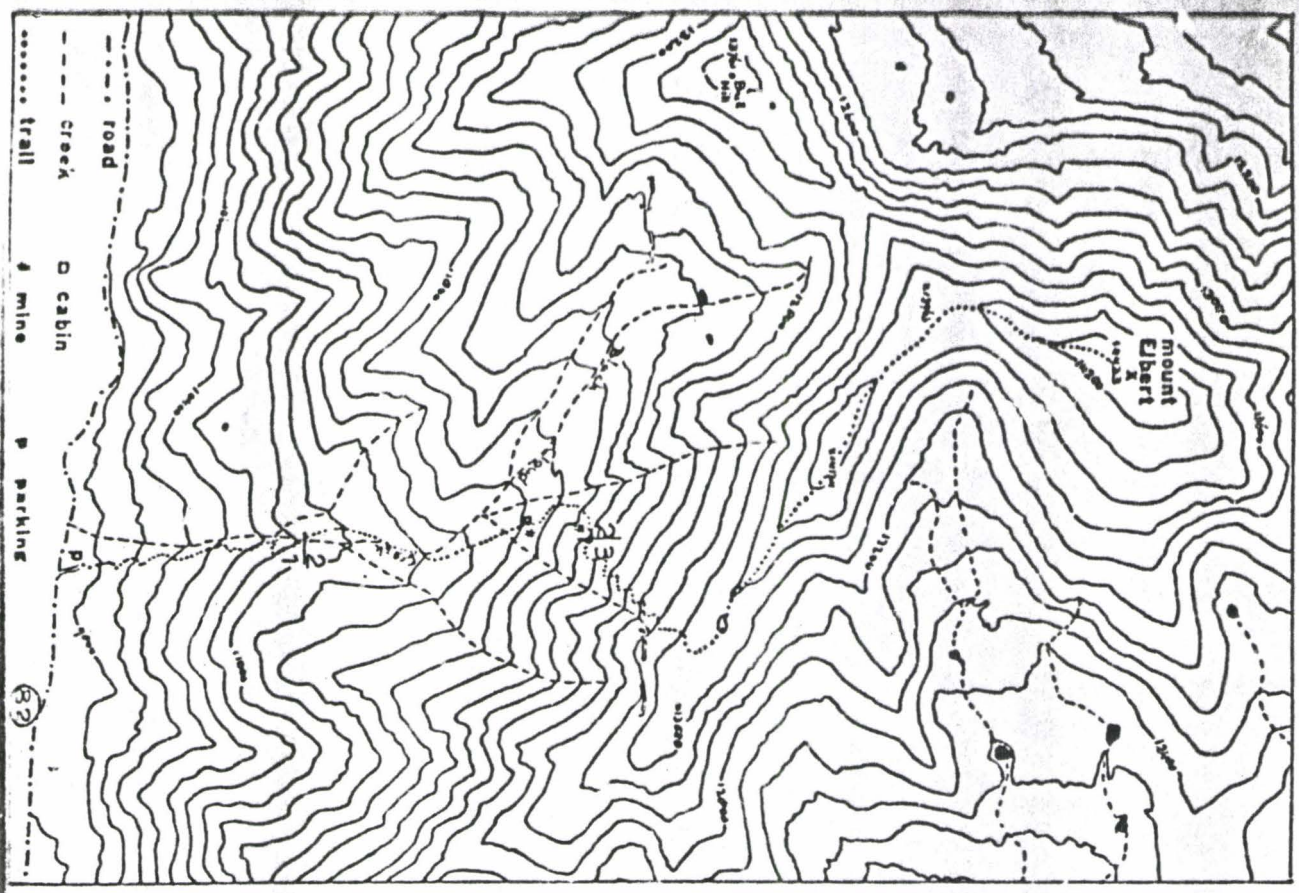
While walking through the forest, you cross the Black Cloud Creek two times. Though the water may look very clean and clear, never drink it without boiling! Many creeks in this area are infected with a microscopic organism called Giardia. When you drink this water drink this water it will cause severe intestine problems like diarrhea and cramps. That would be a very bad end of such a nice hike.

When you have crossed the creek for the second time, you will soon come to a very rocky section of the trail. Maybe you don't like this because it is not easy walking, but try to see the sunny side. Take a close look at these rocks. You will see that they are not only gray as they look at first sight. You can see many colours in and on them. From black to white, even with green and red or pink spots. You can see that most of the rocks show dark and lighter bands. These were created when the rock was formed, deep in the earth, millions of years ago. After that, the earth crust was lifted up by tremendous forces, to form Mt. Elbert and the rest of the Rocky Mountains.

Many kinds of rocks came to the earth's surfice by these movements. The layered ones you see are called Gneiss.



The many coloured patches firmly stuck to these rocks are lichens. Lichens are very slow growing plants, one reason being that they can establish themselves in places where there is almost no water. They can live from the dew and a minute amount of minerals they dissolve from the rock they're growing on. A small lichen patch of a few inches across can be several hundreds of years old. Other kinds of lichens grow on the soil and are bushy, but still very small.



When you have successfully crossed the stone field, a beautiful place to take a rest is awaiting you: Cross the little stream and you will soon arrive at an old, ruinous cabin. It is a miner's cabin, built during the time that Leadville was flourishing because of the mining activities. Many people tried to enrich themselves with the gold, silver and other minerals they dug out of the ground or washed out of the creeks. More and more people came to this part of Colorado to try their luck. The miner who lived in this cabin did not make a mineshaft or portal, but only dug for whatever he was looking for. He must have had a hard life, according to a small metal plate near the cabin, which says:

> *Leszek S. Chobot*
> *November 13 1922 - April 21 1972*
> *May your new life be free of suffering and filled with the beauty and warmth you possessed.*

Behind the cabin you will find the continuation of the trail. Soon you cross another mine where the miner was trying to make his dreams come true.

When you are approaching timberline, you will see that the trees are becoming smaller and more thinly spaced. This is the region where trees make their last stand against the mountain elements. The very cold and dry wind stunts the growth of the trees. Gradually they dwindle into a stunted, wind-bent scrags of groundhugging vegetation.

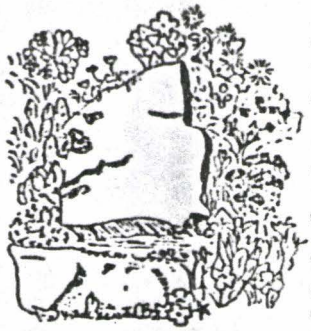
You can easily feel the difference in wind-caused chilling between standing and lying down. The closer to the ground, the more comfortable it is. That's why trees are so small and bent down, and that's why we have to wear warm clothes while walking at this altitude.

SECTION 3, Elevation: 12200-14433 ft.

When you have left the last trees behind you, the alpine tundra will surround you for the next few hours. Here, the wind has free play on every living creature that has the courage to choose this place as home. Their struggle for life is hard in this severe climate. Maybe when you are on this tundra the sun is shining brightly and makes you take off your shirt, but this will not last for long. Summer

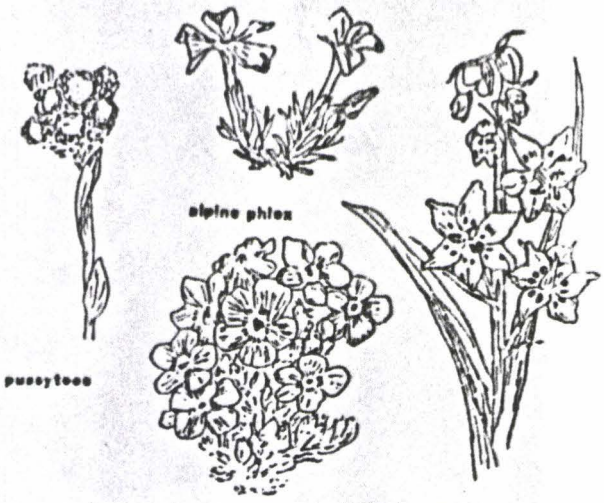
is very short in this area and the weather will be favourable for growing only 2 or 3 months a year. Summer will turn amazingly fast into winter and all plants will be covered with snow for at least 8 months, thus hiding the food for most of the animals. Sometimes it even happens that the snow won't melt on a cold spot, in a cold summer, and the plants will have to wait until next summer to be able to grow and flower again.

Because of this short summer and severe climate, all these plants are very small and humble and grow very slowly. Some put out only two minute leaves a year, and thus grow only a third of an inch in 10 years. So you may understand that these plants are not able to recover soon when they're damaged. That's why the rules about mountain-hiking tell you:"Stay on the trail". Make sure that other people can enjoy this beautiful environment as much as yuo do.



Though most of us associate snow with cold, snow is the great protector against cold for tundra plants. Snow has a high insulating capacity, so planttempera-ture rarely sinks to more than a few degrees below freezing.

As you see, many tundra plants are cushion-shaped. In summer this helps them to retain the heat they soak up during the day, so they will not be damaged by the low temperatures at night. These will, even in summer, often drop below freezing. In this way the interior of the plant can be 20° F higher than the surrounding air.



Animals have the advantage that they can walk away from the snow and cold. Elk and deer do so. However, there are some animals that stay where they are. Most of them hibernate through the winter. During hibernation an animal's metabolism is considerably lowered and the reserves of food stored in its body are used very slowly. The body temperature sinks almost to 32°F.

One of the animals from the tundra that hibernate is the marmot. During the summer they will eat so much that they will become quite rotund. They accumulate as much fat as possible to carry them through the winter. They emerge in late spring, when you can often see them sprawled on a warm rock in what seems to be a blissfull enjoyment of sunshine and warmth.

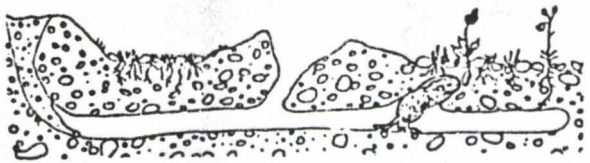
marmot scats and tracks

Most of the animals that stay on the tundra in wintertime hibernate, but some do not. The pika is one of them. It is a small member of the rabbit family, but it looks more like a guinea-pig: it has small, round ears. They often make quite vocal chirping, bleating and whistling sound during the day. Because the plants it eats are not very high in calories, a pika needs to fill its stomach almost every hour to meet its energy needs.

Being a vegetarian, a pika has to store enough food for the 9 to 10 months of the year that fresh plants are not available. In the months of July and August they collect green plants and dry them on a sunny rock, which explains their nickname: "Mountain Haymaker". Their presence can be discovered by their white spots of urine on rocks, around which lichens turn bright orange.

If you brought your binoculars and look back at the mountain-slopes on the other side of the Lake Creek Valley, you may see one of the best adapted mountain animals: the Rocky Mountain goat. It has a very thick fur in winter and flexible hoofs to get a foothold on the bare rocks, on which it jumps around like a real acrobat.

Another animal that doesn't hibernate is the pocket gopher. It is the only totally burrowing animal of the alpine tundra. Not even worms are tunneling here. Much of the soil is too rocky. You may find some heavy ropes of earth lying on the ground, thinking: "That's a mole's work." Actually, these are the tracks of the digging activities of a pocket gopher. These animals seldom show up above the ground. They reach the plants they eat by taking them by the roots and pulling them entirely underground.



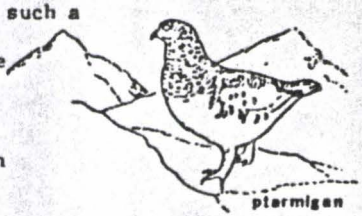
Now let's continue to the summit. Two rocky ridges are awaiting you and between them a beautiful piece of alpine tundra. Especially on these ridges you have a good chance of seeing one or even several marmots. Spots of white urine on the rocks tell you the pika must be around. Some curious little birds may accompany you on your trip. Very common on this altitude are the white-crowned sparrow with its white/black striped head, the horned lark which sings its song high up in the air, and the water pit with its ever bobbing tail.

water pipit

horned lark

white-crowned sparrow

The ptarmigan has such a good camouflage, that you won't see it until it moves. In summer it is brown with white belly and tail, in winter it is all white.



ptarmigan

Reaching the summit is one of the experiences you will never forget, realizing you're on the highest point in Colorado, the second highest in the continental United States. When you man manage standing up without being blown over by the ever strong wind, you can see a hundred miles in each direction. Looking to the North-East with clear weather, you can see Pikes Peak. This is the first place in Colorado where prospectors found gold. That's where Colorado's mining history began.

It is better not to stay too long at the summit. This mountain is known for its early thunder-storms.

The Forest Service wishes you a nice and safe hike back down. Hopefully you didn't see too many Black Clouds.

alpine sunflower or old man of the mountain

APPENDIX E

EXAMPLE OF SUMMIT REGISTER COVER SHEET OVERFLOWING WITH ENTRIES

8/28/88 Brian Hansen 1510 E. Isenhower Boulder CO
8/27/88 Kevin Kelly 860 W. Moorhead Boulder, CO

The Colorado Mountain Club

Summit Register

8-28-88 Malcolm Balfour Acme Pa

Deposited on summit of Mt. Elbert

Date 8/26/88 By Lenard G. Ferguson, Rifle Colo

The altitude of this summit is 14,433

8-28-88 Lisa Nuckols Middletown, Del

Those visiting this point are invited to register the month, day, and year of their ascents with their names and addresses.

8/27/88 Harold Reiff Glenwood Springs CO.

The Colorado Mountain Club has placed this Register here for you to record your ascent and for the Club to collect data on the number, frequency, and home address of people making this climb.

8/27/88 TERRY L. KLEIN, RIFLE, COLO.

Since pencilled records are less apt than ink to become illegible, make your entries with the attached pencil. If it is missing, will you kindly put one in its place. Please check whether both sides of the signature sheet have been filled before making your entry on a new page. If you have comments of general interest to climbers, The Colorado Mountain Club will welcome your letter sent to the address below.

DENNIS L. UHLIG 520 W. 3rd AVE. DR. BROOMFIELD, COLO.

Please show your appreciation of our purposes and efforts by carefully replacing this Register in the metal or plastic tube, securing the cover (not too tightly), and restoring the tube to the spot from which taken. The Club appreciates your cooperation in preventing damage or removal of this Register before it is completed.

8/28 Dennis Collins DENVER CO

If the Register is completely filled, please return it to:

8/28 - Neil Lilley - Dillon, Co

The Colorado Mountain Club
2530 W. Alameda Avenue
Denver, CO 80219

8/27/88 Robert Ford

Jed DACKERT 8-28-88
or call (303) 922-8315

8-27-88 Tom + Lisa Pitta Dillon, Colo

This must be heaven!
cause heres where the rainbow ends
and if this aint the real thing, well
its close enough to pretend

We are organized: to unite the energy, interests and knowledge of the students, explorers and lovers of the mountains of Colorado; to collect and disseminate information regarding the Rocky Mountains in behalf of science, literature, art and recreation; to stimulate public interest in our mountain area; to encourage the preservation of forests, flowers fauna, and natural scenery; and to render readily accessible the alpine attractions of this region.

8-27-88 Susan Schmitz Littleton, Co 80127
8-27-88 ROBERT CATHER TURTLE CREEK, PA 15145
8-27-88 Forrest Reiff Glenwood Springs Colo 7 on Col!
8-27-88 Lowell Cogburn Put out your hand and Touch the face of God

8-27 Rouse, Chris, Ithaca, NY #22

APPENDIX F

LISTING OF TRAIL REGISTER COMMENTS

Comments From Mount Elbert Trail Registers

North Trail

Trail Markings

10/85	Better trail markings for winter hiking
05/86	Trail often snow covered, difficult to find near base
06/86	Mark trail better
06/86	Trail needs better marking
08/87	Mark trail better

Register

06/86	No canister
07/86	Someone stole the register
08/87	Need new CMC register and tube
06/88	This form is too small; a space for name and state; reduce size of spaces for party and activities

Maps

07/86	Section of trail not on "Illustrated Map"
09/86	Does 1969 topo match trail?

Positive Remarks

06/86	Nicely maintained
07/88	Trails well maintained

Trail Condition

08/86	The trail on N. ridge was poorly designed. It must be redesigned with erosion controls, such as proper switchback and water gullies
08/86	Quite possibly the worst case of soil erosion caused by recreational use in the NF. Close the North Trail!!! Let it recover, route traffic to Twin Lakes trail
08/86	Not enough switchbacks
08/86	Mt. Elbert trail designed by toadstool mentality
07/87	Need to make more switchbacks
07/87	Get off your asses and do some maintenance on the Box Cr/Elbert trail, consolidate it, reroute, put

Positive Remarks

07/86	Very nice trail, thanks
07/87	Trail very appreciated, nothing like this in Texas
07/88	Trail is maintained well
07/88	Trail in good condition

Map

06/87	Please number trail 1439

Facilities

06/88	Outhouses, drinking fountains
06/88	Outhouses

Trail Condition

06/86	Switchbacks needed
06/86	Make trail a bit drier
05/88	Ever hear of switchbacks?
06/88	Build some switchbacks, poor trail as is
06/88	Need spring trail to avoid snowfields; everybody making own trail to summit
07/88	Trail switchbacks needed badly

	up a sign asking hikers to stay on the main trail
08/87	Too much trail erosion
08/87	Steep, waterbars
08/87	Switchbacks would be nice
08/87	Trail eroded in spots
10/87	Trail needs work

South Trail

Trail Markings

07/86	Need signs
07/86	Mark main trail
07/87	Trail needs better marking
07/86	Need some trail markers
07/86	Need signs
07/86	Make signs
07/86	Signs from trail head to here
07/86	Mark the main trail
08/86	Very poorly marked trail up to here from Lakeview camp
08/86	You need to put mileage markers out
08/86	Trail markers below this point missing
08/86	Need better trail markers below this
08/86	Trail marked well
08/86	Poor trail markers
08/86	Thanks for the trail markers
08/86	No signs had difficulty finding trail
08/86	No signs
06/87	Better marking by beaver pond
07/87	Difficult to find trail in places
07/87	Trail needs to be better mark, it is a disgrace currently
07/87	Trails need better marking, got lost coming out of CG
08/87	Improve trail signs, PLZ
09/87	Better markings than others we have seen.
09/87	Mark trails
06/88	Signs needed at forks
07/88	No need for more signs
07/88	Nice trail signs
07/88	Trail very confusing

Register

07/87	Need a summit register

APPENDIX G

TRAIL INVENTORIES 1986

TRAIL LOG AND CONDITION INVENTORY

San Isabel National Forest

1484	No. Mt. Elbert Trail-Jct. of Colo. Trail to summit	1 of 3
Trail No.	Trail Name and Segment	Sheet

Mt. Elbert & Mt. Massive Quads	Conway	7-11-86
Map (attach copy)	Surveyed by	Date

DISTANCE	MAP REF	FEATURE	NEEDS OR CONDITIONS
0	1	Jct. of Colo.& Elbert	Good
342		Trail divides around 2 trees	"
462		Small dry gully	"
653		Trail divides around trees	"
804		" "	"
846		" "	"
1082		" "	"
1404		" "	"
1670		Trail meets old road on left	"
1809		" " " " on right	"
2096		Trail divides around 20" stump	"
2269		Trail turns uphill, follows stream	"
2477		Trail crosses stream	Very rocky for 20'
2964		Water bar	Needs work
2993		" "	"
3152		" "	"
3585		In small meadow	Needs cleaning
3811		Two trees across trail	Needs to be sawed
3839-3996		Major erosion down trail	Trail divides
4550		Water bar	Needs work
4803		18" log across trail	Trail detours 6' around trail
4916		10" log across trail	Forms good water bar, needs cleaned
4976		6" log across trail stream on right	Needs water bar & channeled
5121		Switchbacks away from stream	Good
5227		Small gully	"
5280 (1 mile)		Top of gully	"
270		Small tree leaning over trail, log	Need to be sawed
322	2	Trail crosses stream	Good
424		Trail divides around log on trail	Needs to be sawed
544		Small switchbacks	Good

TRAIL LOG AND CONDITION INVENTORY

1484 (Trail No.) — No. Mt. Elbert Trail-Jct. of Colo. Trail to summit (Trail Name and Segment) — 2 of 3 (Sheet)

DISTANCE	MAP REF	FEATURE	NEEDS OR CONDITIONS
624		Water bar	Needs work-roots, rocks stabilizing
675-739		Slight boggy area	Needs work
777		Too narrow for horse	Needs trees cut
1115		Water bar	Needs work
1647		Log across trail	Good water bar
1779		Trail off to left	Looks like detour needs eliminating
1950		Tree branches across trail	Need to be cut
2177		Bottom edge of treeline	Good
2441		Shortcut in trail	Needs covering
2733		Slight switchback	Good
2819		Trail divides 20'	"
2854		Switchback	"
2890		" "	"
2997		Trail divides 3 ways, 30'	"
3278		Switchback	"
3450		" "	"
3503		" "	"
3562		" "	"
3581		" "	"
3714		Trail divides 40'	Little erosion
4019		" "	"
4063-4137		Water on trail	Good
4137-4240		Snow on trail	Detour made on tundra, erosion
4368		Switchback	Good
4682		" "	"
5022		" "	"
5280 (2 miles)	3	Steep rock field	"
246		Trail flattens	"
880		Switchback	"
1356		Trail forks	"
1531		Trail steepens	"
1585		Trails join again	"
1753		Switchback	"
2177		Switchback	"
2496		Small depression right of trail	Looks like an old mine
2936		Switchback	Good
3301		" "	Steep
3371		" "	"
3471		" "	"

TRAIL LOG AND CONDITION INVENTORY

1484	No. Mt. Elbert Trail-Jct. of Colo. Trail to summit	3 of 3
Trail No.	Trail Name and Segment	Sheet

DISTANCE	MAP REF	FEATURE	NEEDS OR CONDITIONS
3644-4529	4	Solid rock, little vegetation	Many SBs steep
4529		Trail flattens	
3644-4529	4	Solid rock, little vegetation	Many SBs steep
4529		Trail flattens	
4961		Trail steepens	
5280 (3 Mi)		Steep pitch	Good
623		Small flat area	"
1117		Trail follows ridge	"
1538		Trail from left joins ridge	"
1674		Rocks, wind break	"
1836	5	Summit	"

TRAIL LOG AND CONDITION INVENTORY

San Isabel National Forest

1481	So. Mt. Elbert Trail (from Co. Trail to Summit)	1 of 2
Trail No.	Trail Name and Segment	Sheet

Mt. Elbert Quad	Tim Koch	7-23-86
Map (attach copy)	Surveyed by	Date

DISTANCE	MAP REF	FEATURE	NEEDS OR CONDITIONS
0	1	Intersection with Co. Trail	Good condition
		Registration box	Good condition
48		Water bar	Needs cleaned
200		Trail through aspen stand	
436		Trail counter	On level stretch above first steep part, counter to south reflector to north.
569		Erosion	Needs water bar
720		Double trails-water bars	Need cleaned
930-980		Steep and eroded	Needs water bar
1428		Steep and eroded	Needs water bar
1625		2' stream	Rock foot walk, good cond.
1954		Water bar	Needs cleaned
2235		Corridor too narrow	
2315		Switchback	Needs water bar
2595-2898		Water bar	Needs cleaned
2930-3078		Eroded-double trail	
3080	2	Scenic meadow, wildflowers	
3211		Eroded	
3594		Water bar	Needs cleaned
3600		Eroded	Needs water bar
3700		Trail follows old roadway, it is in fair condition but often double and triple trails follow it. It is also eroded down 4" to 8" along entire length. Water bars needed to prevent further erosion.	
5022 (1mi.)		Water bars	Need cleaned
180-360		Very rocky	Needs cleared
380	3	Treeline	
1300-1700		Old road level	Good condition
1700-2100		Steep-eroded down 10"	Water bars needed
2480	4	Great view	
2651-3000		Steep section	Badly eroded, 6 trails Needs fill and water bars

TRAIL LOG AND CONDITION INVENTORY

San Isabel National Forest

1481	So. Mt. Elbert Trail (from Co. Trail to Summit)	2 of 2
Trail No.	Trail Name and Segment	Sheet

DISTANCE	MAP REF	FEATURE	NEEDS OR CONDITIONS
4026	5	Back to one trail	Trail off of old road and on rock from here to summit. Steep and twisting. Dry, no rock slide problems. In good shape for summit trail.
4100	6	Summit	

Total length of trail 2.8 mi.

TRAIL LOG AND CONDITION INVENTORY

San Isabel National Forest

1480	Black Cloud Trail	1 of 3
Trail No.	Trail Name and Segment	Sheet
Mt. Elbert Quad	Gerard	6-18-86
Map (attach copy)	Surveyed by	Date

DISTANCE	MAP REF	FEATURE	NEEDS OR CONDITIONS
0	1	Trailhead	Entrance to trailhead is dangerous. Willows need to be cut. Parking lot and trailhead facility needed. Two trails begin here. Right trail should be eliminated, left one needs designation. Two entrances available, (see map). No. 1 safer, some hazardous trees need cutting. Is maybe private property? Rocks on road need removed.
2-4	2	Crossing with road	Sign and trail continues left on road, is not clear.
826		Crossing with trail	Other trail goes left and down to Mt. Elbert Lodge.
936		Switchback	Steep hill, 4x4 road ends.
989		Rock water bar (RWB)	Needs to be cleaned.
1049		Washout	Water bar needed.
1073		(RWB)	Needs to be cleaned
1146		(RWB)	Needs to be cleaned
1253		(RWB)	Cleaned 6-18-86
1369		Switchback	Water bar needed.
1418		(RWB)	Cleaned 6-18-86
1570		(RWB)	OK
1705		(RWB)	Cleaned 6-18-86
1840		Switchback	Shortcut, needs eliminated
1935		Washout	(RWB) needed.
1975		(RWB)	Cleaned 6-18-86
2090		(RWB)	Cleaned 6-18-86
2325		(RWB)	Cleaned 6-18-86
2361		Switchback-solid rock	OK
2646		Washout	(RWB) needed
3122-3236		Water flowing over trail.	Two trees hanging over trail, very wet ground.
3210		Well	Water flows off through (RWB) at 3204.
3236		Well	Corduroy needed from 3177-3236
3250		Culvert	OK
3426		Curve to the right	Trail washes away, barriers needed

TRAIL LOG AND CONDITION INVENTORY

1480 (Trail No.) | Black Cloud Trail (Trail Name and Segment) | 2 of 3 (Sheet)

DISTANCE	MAP REF	FEATURE	NEEDS OR CONDITIONS
3846	2	Switchback, right	
4013		Washout uphill side and downhill	Barriers needed
4081		Switchback, left	Two big dead trees lying over trail, 1'.
4677			1x1 cut needed, other 2 cuts also. Three live trees, 4" almost dead
4960		Switchback, right	
5211		Switchback, left	Shortcut
5370			Washout/shortcut
5425-5445			Little stream crossing trail, culvert or corduroy needed.
5580-5600		5580 waterbar 5600 well	Little stream going down trail. Adding big rocks will be fine.
5920	3	Bridge	Broken, new one needed. Second bridge a bit farther (20 ft.) This one dangerous also.
6125		Trail turns right, other goes up.	On flat hilltop, fireplace, 2' old chair, not much polluted.
6157			Branches of trees lying over trail Cut 6-18-86.
6671			Dead log, two cuts needed.
7171	4	River crossing	No bridge
0		River crossing	Bridge needed, approx. 15'. Upstream is better location, 6' trail must be rerouted if we use this one.
0048		Ponderosa	Some 3" trees need to be cut.
0154		2 ponderosa	Need to be cut.
0215-0600		Ponderosa & aspen	Some 3-5" trees need to be cut.
0602		Dead log	1', one cut needed.
0780		2 ponderosa	2" remove
0827-1021		Ponderosa	Remove some
1379		2 ponderosa	3" remove
1495-1608		Aspen & ponderosa	Remove some trees.
1618		Dead log	7", one cut needed.
1914		Spruce	Trail badly marked.
2000		Rocks	Trail marked with cairns.
2970		Stream crossing	Stepping stone loose.
3230	5	Cabin	Trail can be improved by removing.
2000-3230		Rocks up to cabin	Rocks, thousands of empty cans, should be cleaned.

TRAIL LOG AND CONDITION INVENTORY

1480	Black Cloud Trail	3 of 3
Trail No.	Trail Name and Segment	Sheet

COMMENTS: After cabin, trail continues up for 1/2 mile. One dead log one trail. From treeline to ridge no trail exists, but marked with cairns. From ridge to top trail is easy to find not marked. Some very rocky parts. Total length approximately 4.4 miles. Trail to Fidelity Mine is obscured, difficult to find.

APPENDIX H

RECREATION OPPORTUNITY GUIDES

Forest Service
United States
Department of
Agriculture

ROCKY MOUNTAIN REGION
National Forests - PIKE & SAN ISABEL
Ranger District - LEADVILLE

Date: 3/88

TRAIL BEGINS:

Trailhead on Halfmoon Creek. Take the Colorado Trail (also known as the Main Range Trail) about one (1) mile south to junction with North Mt. Elbert Trail No. 1484.
Elevation: 10,100 ft. (3085m)

TRAIL ENDS:

Summit of Mt. Elbert Highest point in Colorado.
Elevation: 14,433 ft. (4409m)

ACCESS: Access to the trailhead on Halfmoon Creek beginning from Leadville is as follows: Travel three (3) miles southwest on US Hwy 24 to County Highway 300, then approximately .8 mile west to Forest Road 110. On Forest Road 110 travel south about seven (7) miles to the Trailhead

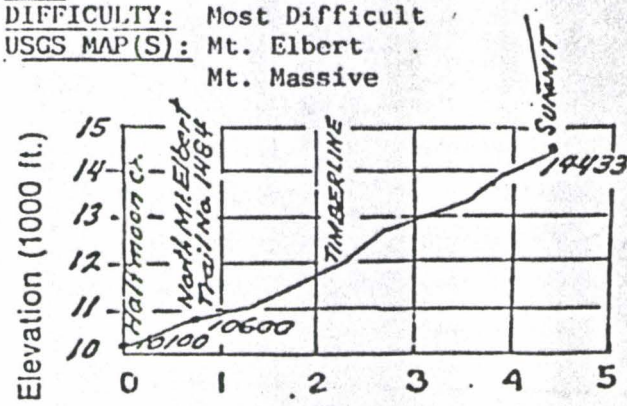
NORTH MT. ELBERT TRAIL NO. 1484

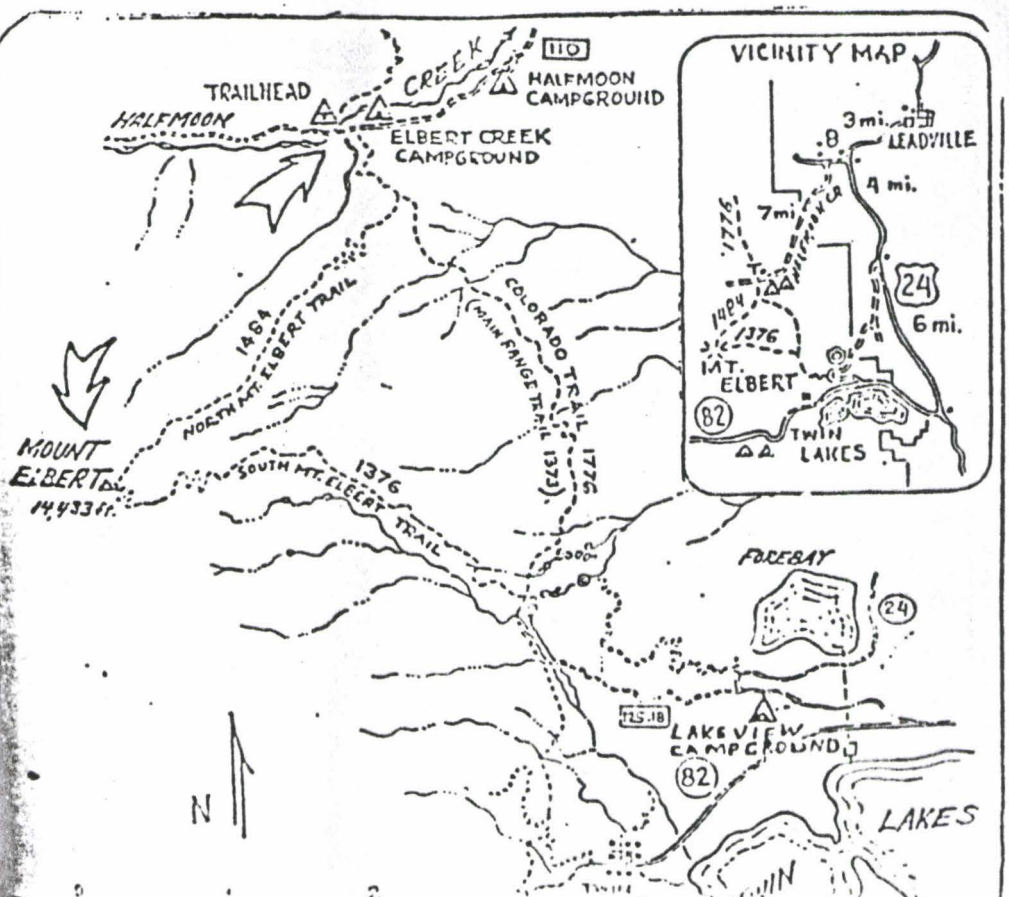
LENGTH: 4 1/2 Miles (7 km.) Approx.

RECOMMENDED SEASON:

Spring	Summer	Fall	Winter
	6/15-----9/30		

USE: Very Heavy
DIFFICULTY: Most Difficult
USGS MAP(S): Mt. Elbert
Mt. Massive





The Colorado Trail No. 1776 (Main Range Trail No 1373) and both Mt. Elbert Trails 1376 and 1484 are for foot and horse travel only.

MOTORIZED USE IS PROHIBITED

Forest Service
United States
Department of
Agriculture

ROCKY MOUNTAIN REGION
National Forests - PIKE & SAN ISABEL
Ranger District - LEADVILLE

Date: 3/88

TRAIL BEGINS:
Trail starts at a trailhead adjacent to County Road #24. This trailhead accesses Colorado Trail No. 1776 which in turn joins with the South Mt. Elbert Trail No. 1376.
Elevation: 9,622 ft. (2939m)

TRAIL ENDS:
Summit of Mt. Elbert
Elevation: 14,433 ft. (4409m)

ASSESS: From Leadville travel south on US Hwy 24 to the junction of Colorado Hwy 82. Continue approximately 3-3/4 miles west to the Lakeview Campground turnoff, north on Lake County Rd. 24. Continue beyond the campground approximately 1/4 mile to trailhead where parking is available. The trail will follow the Colorado Trail No. 1776 for approximately three miles and then veer NW onto the South Mt. Elbert Trail No. 1376 to the summit.

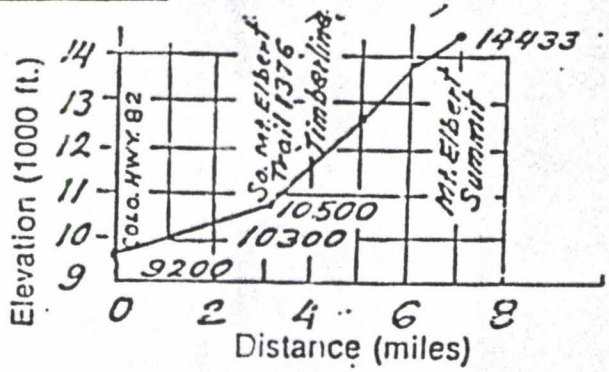
TRAIL: SOUTH MT. ELBERT TRAIL # 1376

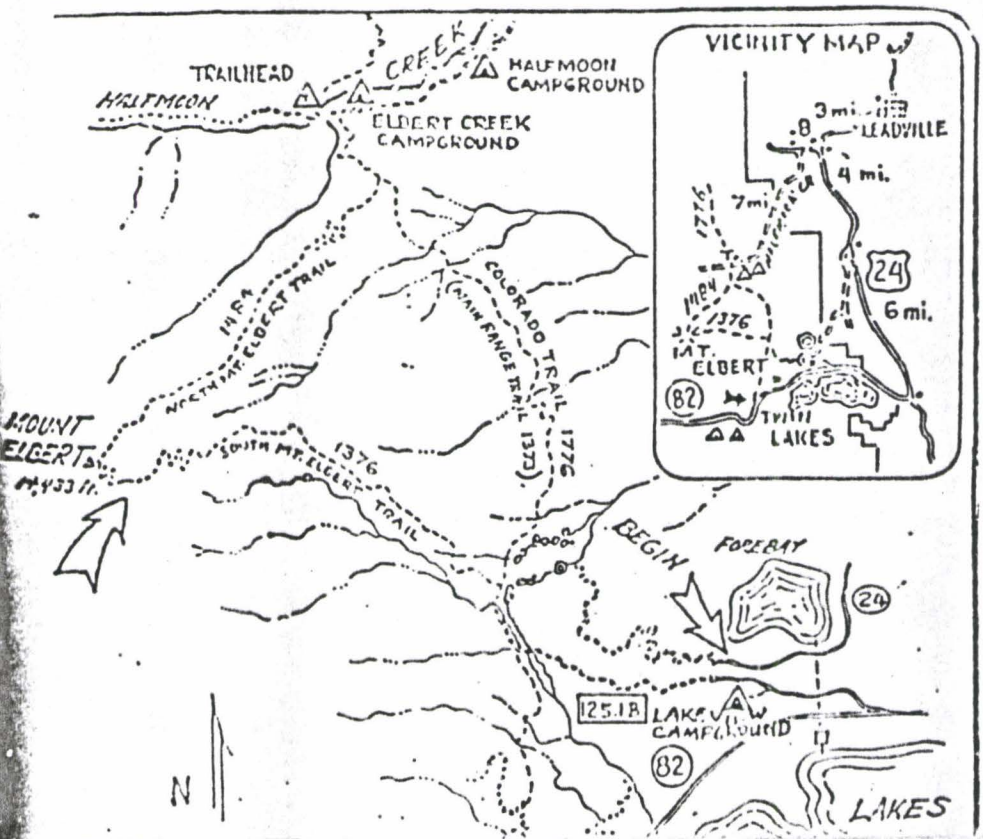
LENGTH: 6 Miles (11 km.) Approximately

RECOMMENDED SEASON:

Spring	Summer	Fall	Winter
	6/15-----9/30		

USE: Heavy
DIFFICULTY: More Difficult
USGS MAPS(S): Mt. Elbert





The Colorado Trail No.1776 (Main Range Trail No. 1373) and both Mt. Elbert Trails No.'s 1376 and 1484 are for foot and horse travel only.

MOTORIZED USE IS PROHIBITED

SPECIAL CONSIDERATIONS:

ATTRACTIONS: Mt. Elbert at 14,433 ft. elevation is the highest point in Colorado. It is the second highest mountain in the adjacent 48 states. Samuel H. Elbert (1833-1899) was an outstanding and widely known civic leader in the Territory and State of Colorado. Mt. Elbert, Elbert County, and the town of Elbert, Colorado were all named in his honor. Elbert served as Colorado's Territorial Secretary, Territorial Governor and State Supreme Court Justice. Active in the formulation of mining legislation and reclamation projects, he promoted concepts of conservation and irrigation which were ahead of his time.

CLIMBING THE PEAK: Technical ability or special mountain climbing experience is not required to climb Mt. Elbert. Good physical condition is important; however, the ascent and return requires a good full day of strenuous hiking. At this elevation where the air is thin, you wll require extra energy.

Stick to the trail. Don't shortcut trail switchbacks as this causes erosion. Take a few extra minutes to pack out whatever you pack in. Better yet, pack out a few pieces of someone else's litter too.

SPECIAL PRECAUTIONS: The cardinal rule of experienced hikers is to turn back if in doubt. You can always make another trip if weather conditions are bad, you started too late, or if someone tires rapidly.

Start your trip early since showers or thunderstorms often occur in the afternoon. These storms build quickly and may bring freezing rain, sleet or snow. Avoid exposed areas, rock pinnacle , outcrops, lone tall trees, and other natural lightning rods. There are no shelters on the peak. Temperatures seldom are above 50°F and often drop below freezing.

Wear proper clothing with special attention to boots and lightweight, warm and waterproof jacket. As a minimum, you should carry a day-pack with lunch, quick energy snacks, water, sunglasses, sunburn lotion, and a small first aid kit. Don't forget your camera!

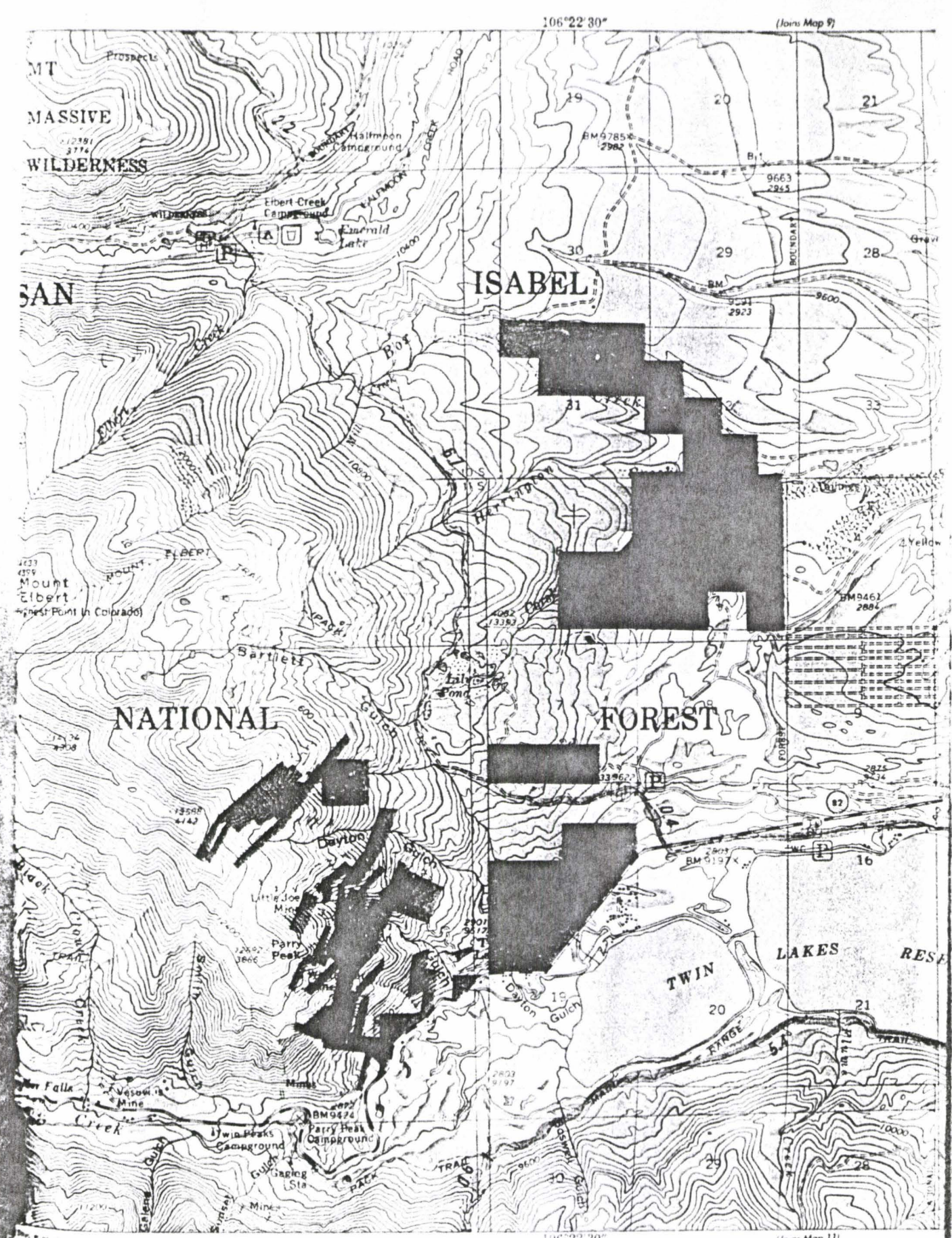
Snowfields and gullies can be treacherous. Don't slide down these slopes. The gradient can be deceptive, and you can quickly loose control. The rocks at the bottom are hard. Stick to the known trails. Be sure to advise relatives or friends of your trip, route and schedule. Stay with your party or group. Winter climbing is not advised.

CAMPING: Campsites are available at Elbert Creek or Halfmoon Campgrounds. Suitable backpacking campsites are not available along the trail route. The campgrounds are accessible to most types of vehicles. However, the very large motor homes, trailers over 22 ft. or highway type busses are not recommended. Forest Road 110 is narrow, gravelled, and rough, so please drive with caution. The road is closed by snow in winter months.

WATER: Drinking water is not available once you leave the campgrounds. Carry an adequate supply for your entire hike. Streams and surface water should not be considered safe for drinking without purification.

APPENDIX I

MAP SHOWING EXITING FACILITIES


106°22'30"
(Joins Map 9)
MT
MASSIVE
WILDERNESS
SAN
ISABEL
NATIONAL
FOREST
Prospects
Halfmoon Campground
Elbert Creek Campground
Emerald Lake
Mount Elbert
(Highest Point in Colorado)
Bartlett
Lily Pond
Twin Lakes
Parry Peak
Parry Peak Campground
Twin Peaks Campground
Dayton Gulch
Dayton Guich
Little Joe Mine
Vesson Mine
Mines
Gauging Sta
Falls
Creek
TRAIL
PACK
BOUNDARY
FOREST
BM 9785
2982
BM 9461
2884
BM 9474
2893
BM 9197
2803
9663
2965
9600
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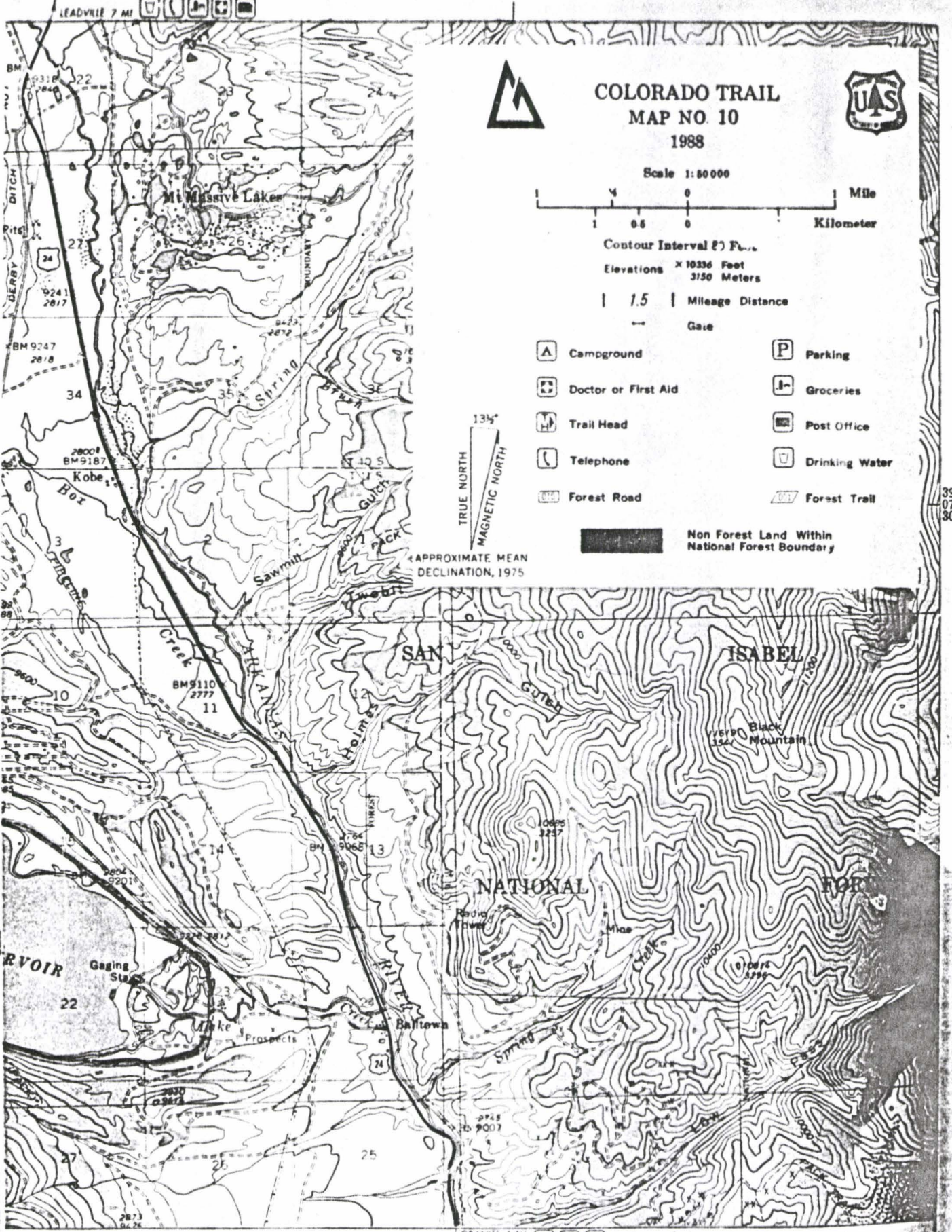
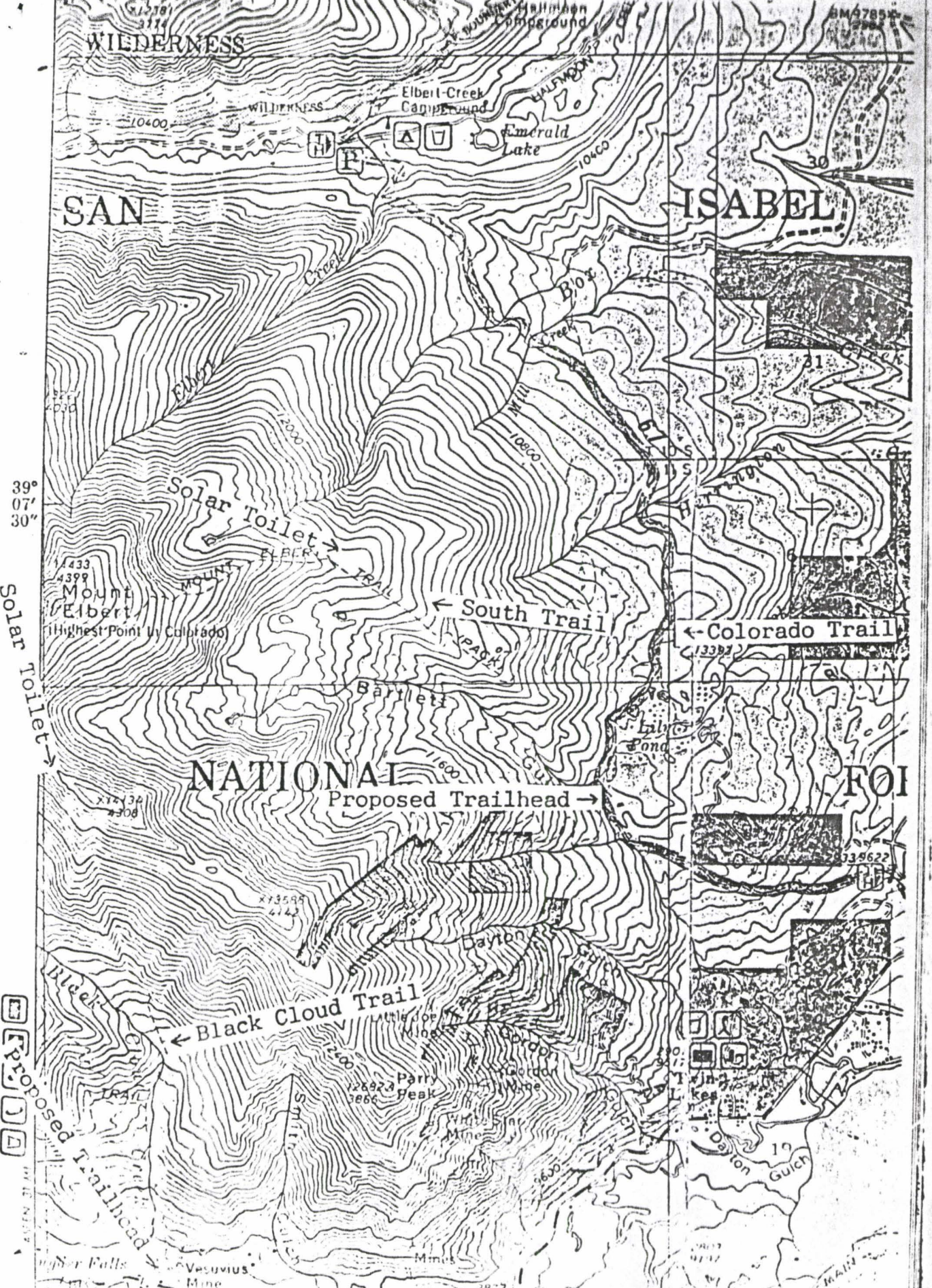
30
31
33
16
82
54


COLORADO TRAIL
MAP NO. 10
1988
Scale 1:50000
1 0 1 Mile
1 0.5 0 Kilometer
Contour Interval 80 Feet
Elevations × 10336 Feet
3150 Meters
1.5 Mileage Distance
Gate
Campground
Parking
Doctor or First Aid
Groceries
Trail Head
Post Office
Telephone
Drinking Water
Forest Road
Forest Trail
Non Forest Land Within National Forest Boundary
13½°
TRUE NORTH
MAGNETIC NORTH
APPROXIMATE MEAN DECLINATION, 1975
LEADVILLE 7 MI
Mt Massive Lake
Kobe
Box
Creek
Sawmill
Gulch
Spring
Gulch
Arkansas
River
Holmes
Creek
SAN
ISABEL
NATIONAL
Black Mountain
Gaging Sta
Lake
Prospects
Balltown
Mine
Creek
Spring
Gulch
RVOIR
BM 9247
BM 9187
BM 9110
BM 9065

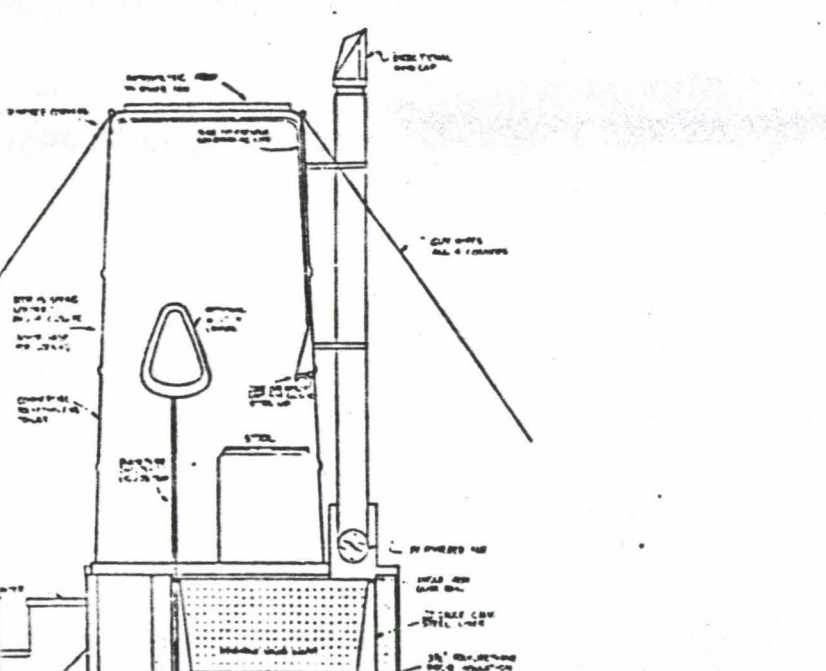
APPENDIX J

MAP OF POSSIBLE LOCATIONS FOR PROPOSED FACLITITES

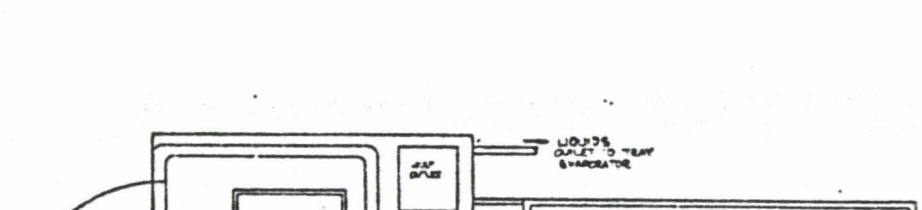

WILDERNESS
Elbert Creek Campground
Emerald Lake
SAN
ISABEL
Solar Toilet
Mount Elbert
(Highest Point in Colorado)
South Trail
Colorado Trail
Bartlett
NATIONAL
FOI
Proposed Trailhead
Black Cloud Trail
Parry Peak
Dayton Gulch
Proposed Trailhead
39° 07' 30"

APPENDIX K

SOLAR TOILET PLANS



ELEVATION



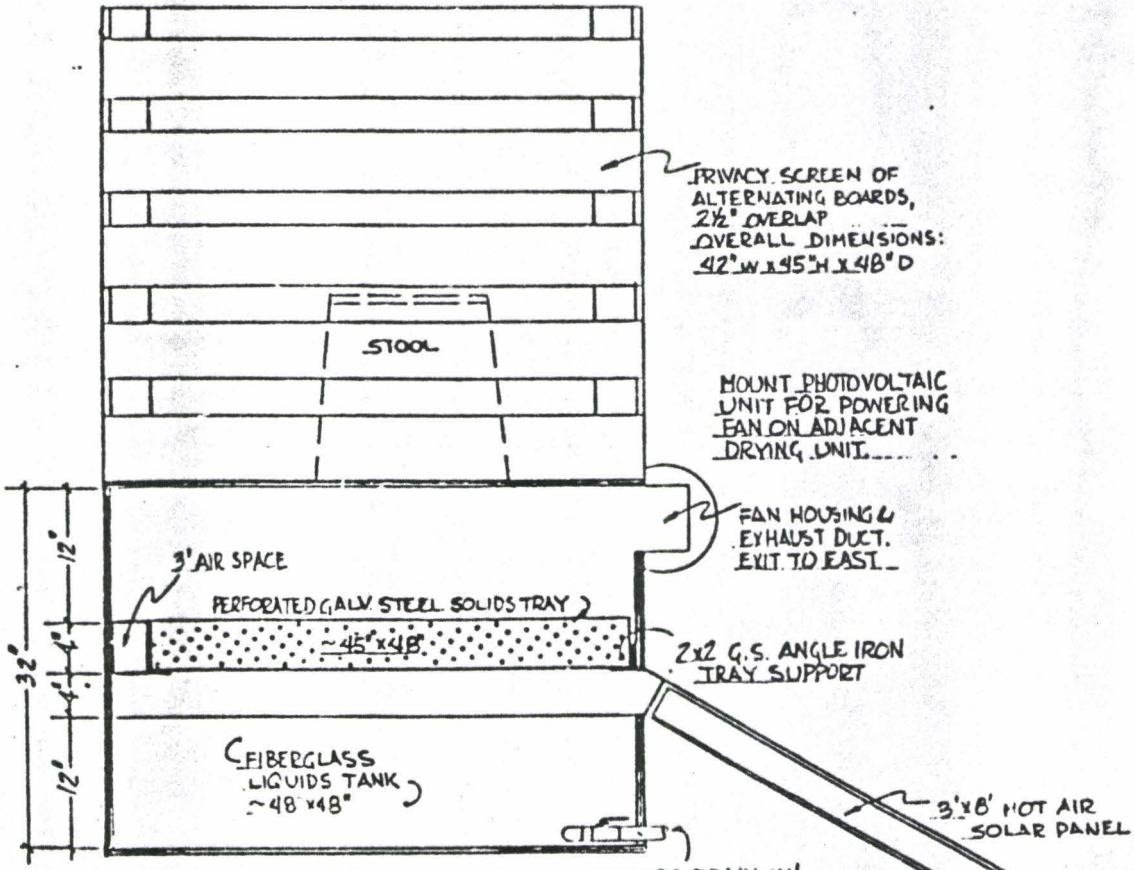
TOP VIEW
SCALE: 1"=1'0"

REDUCED SIZE REPRODU

UNITED STATES DEPARTMENT OF THE INTERIOR NATIONAL PARK SERVICE	PREPARED DESIGNED DRAWN	BACKCOUNTRY SOLAR TOILET LOCATION OTHER ITEMS LOWER 2844 BASIS OF PLAN ROCKY MOUNTAIN NATIONAL PARK

PROPOSED SOLAR TOILET

(THIRD GENERATION)
DESIGNED TO MINIMIZE SIZE WHILE MAXIMIZING SOLIDS DRYING.

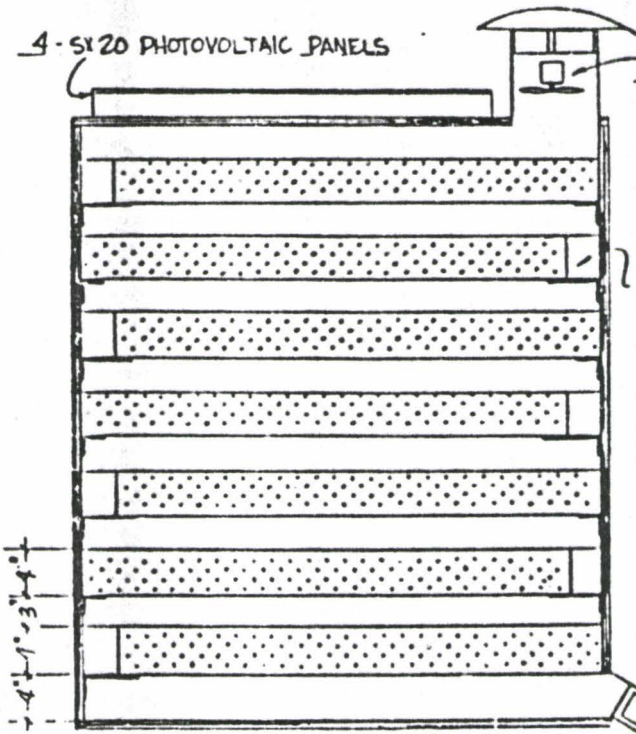

PRIVACY SCREEN OF ALTERNATING BOARDS, 2½" OVERLAP
OVERALL DIMENSIONS: 42"W x 95"H x 48"D
STOOL
MOUNT PHOTOVOLTAIC UNIT FOR POWERING FAN ON ADJACENT DRYING UNIT
FAN HOUSING & EXHAUST DUCT. EXIT TO EAST
3' AIR SPACE
PERFORATED GALV. STEEL SOLIDS TRAY
~45"x48"
2x2 G.S. ANGLE IRON TRAY SUPPORT
FIBERGLASS LIQUIDS TANK ~48"x48"
3'x8' HOT AIR SOLAR PANEL
12'
4'
4'
4'
32'
12'
OVERALL VAULT DIMENSIONS: 48"W x 32"H x 48"D (INSIDE)
LIQUIDS DRAIN W/ VALVE. CONNECT TO TRAY EVAPORATOR.

ELEVATION - CUT AWAY SECTION

SCALE: 1" = 1'0"

PROPOSED DRYING VAULT

COMPANION UNIT TO THIRD GENERATION SOLAR TOILET.

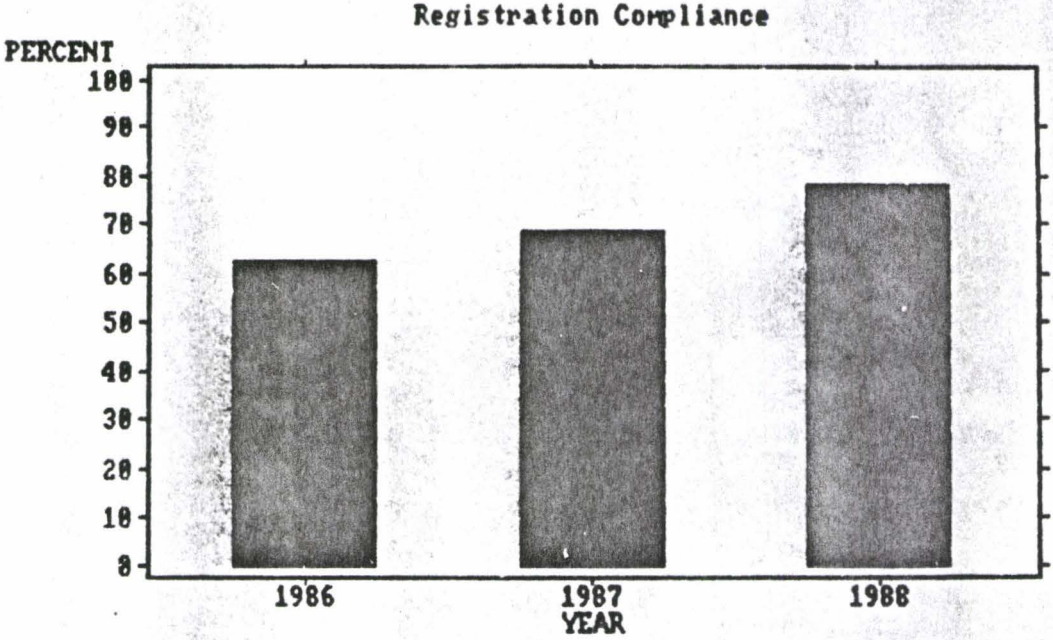

4 - SX20 PHOTOVOLTAIC PANELS
EXHAUST FAN
3" AIR SPACE AT ALTERNATE TRAY ENDS TO PROVIDE AIR FLOW LABYRINTH.
TRAYS STORED IN DRYING VAULT, USED ONE AT A TIME IN TOILET VAULT, LEVELLED WHEN FULL AND RETURNED TO DRYING VAULT FOR LONG-TERM DRYING.
4'-1"-3"-4"
OVERALL VAULT DIMENSIONS - 48"x48" HEIGHT VARIES WITH NUMBER OF TRAYS TO BE ACCOMODATED.
2'x8' HOT AIR SOLAR PANEL

ELEVATION - CUT AWAY SECTION

SCALE: 1" = 1'0"

APPENDIX L

REGISTRATION COMPLIANCE


Registration Compliance
PERCENT
100
90
80
70
60
50
40
30
20
10
0
1986
1987
1988
YEAR